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IN THE

Supreme Court of the United States

OCTOBER TERM, 1976

No. 75-1473

E. I. DU PONT DE NEMOURS AND COMPANY, ET AL.,
Petitioners,

v.

RUSSELL E. TRAIN, as Administrator,
Environmental Protection Agency,
Respondent,

No. 75-1705

RUSSELL E. TRAIN, as Administrator,
Environmental Protection Agency,
Cross-Petitioner,

v.

E. I. DU PONT DE NEMOURS AND COMPANY, ET AL.,
Cross-Respondents.

On Writs of Certiorari to the United States
Court of Appeals for the Fourth Circuit

MOTION OF APPALACHIAN POWER COMPANY, ET AL. FOR LEAVE TO FILE BRIEF AS AMICI CURIAE AND BRIEF AS AMICI CURIAE

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Appalachian Power Co., *et al.*, (Electric Utilities)[1] hereby respectfully move, pursuant to Rule 42 of the

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[1] Electric Utilities consist of the 74 publicly and privately owned electric utilities listed at pp. 23-25 of the attached Brief.

Court, for leave to file the attached brief as amici curiae in the above-captioned consolidated cases.

Counsel for the government (Respondent in No. 75-1473, Cross-Petitioner in No. 75-1705) has consented to the filing of this brief.[1] We are advised that counsel for du Pont, *et al.*, (Petitioners in No. 75-1473, Cross-Respondent in No. 75-1705) will take no position with respect to this motion.

In support of this motion Electric Utilities state as follows:

1. On July 16, 1976, the day on which du Pont, *et al.* filed their briefs in these cases,[2] the Fourth Circuit issued its opinion in *Appalachian Power Co.* v. *Train,* Nos. 74-2096, *et al.,* (4th Cir., July 16, 1976), an appeal brought by Electric Utilities to review the regulations promulgated by EPA for the steam electric industry pursuant to the Federal Water Pollution Control Act.

2. The Fourth Circuit's opinion in *Appalachian Power* includes holdings which are identical to those in *E. I. du Pont de Nemours & Co., et al.,* v. *Train,* Nos. 74-1261, *et al.,* (4th Cir. March 10, 1976) (*du Pont II*), challenged by du Pont, *et al.,* as Petitioners in No. 75-1473, and the government as Cross-Petitioner in No. 75-1705. As amici respondents, Electric Utilities in their brief would urge this Court to affirm in full the challenged holdings of the Fourth Circuit in *du Pont II.*

3. Electric Utilities essentially agree with the Fourth Circuit's resolution of the jurisdictional issue.

[1] The government's consent is attached as the Appendix to the motion.

[2] See *infra* note 5.

While their reasons differ from those advanced by the government, Electric Utilities therefore agree with the government's conclusion that the courts of appeals have jurisdiction to review effluent limitations guidelines. However, since another amicus is supporting the jurisdictional holding of the court below, Electric Utilities, if permitted to file their brief as amici curiae, will address only the Fourth Circuit's holdings that (1) EPA regulations are "presumptively applicable" and (2) EPA must include an "escape clause" in its new source regulations.[4] To the best of Electric Utilities knowledge, these arguments have not been prsented, and will not be presented, by the parties or any other amicus in this case or in the related case, *du Pont I,* No. 75-978. Electric Utilities believe that presentation of these arguments may materially aid this Court's resolution of the difficult issues before it in these cases.

4. The attached brief is being filed within the time prescribed for filing Respondent's brief in *du Pont II* and is being filed prior to the date that the government plans to file its brief as "Cross-Petitioner-Respondent."[5]

[4] As amici in *du Pont II* when it was before the court below, Electric Utilities argued that EPA's regulations are only "presumptively applicable." The Fourth Circuit essentially adopted Electric Utilities' position in its *du Pont II* decision.

[5] The deadline for filing a petitioner's brief in *du Pont II* was August 6, 1976. du Pont, *et al.*, filed their briefs as Petitioners in *du Pont I* and as Petitioners-Cross-Respondents in *du Pont II* on July 16, 1976, the date their brief was due in *du Pont I.* The government has requested and was granted an extension from August 16 to September 4 within which to file its briefs. Apparently the government will not file a separate brief in its Cross-Petition and will file, on September 4, a single brief as "Cross-Petitioner-Respondent," in *du Pont II.*

WHEREFORE, Appalachian Power Co., *et al.* respectfully request that this motion be granted and that the attached brief amici curiae be filed with the court.

Respectfully submitted,

GEORGE C. FREEMAN, JR.
A Member of the Bar
of this Court

Counsel for Movants
Appalachian Power Co., *et al.*

APPENDIX TO MOTION

OFFICE OF THE ATTORNEY GENERAL
WASHINGTON, D.C. 20530

August 16, 1976

Michael B. Barr, Esq.
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Suite 1060
Washington, D.C. 20006

Re: DU PONT v. TRAIN, Nos. 75-1473 AND 75-1705

Dear Mr. Barr:

I hereby consent to your filing a brief amicus curiae in the above captioned cases on behalf of Appalachian Power Co., et al.

Sincerely,

/s/ ROBERT H. BORK
Robert H. Bork
Solicitor General

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On Writs of Certiorari to the United States Court of Appeals for the Fourth Circuit

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BRIEF OF APPALACHIAN POWER COMPANY, ET AL., AS AMICI CURIAE

INTEREST OF AMICI

Amici, Appalachian Power Co., *et al.* (Electric Utilities),[1] urge this Court to affirm in full the decision of the Fourth Circuit in *du Pont II*.[2] Electric Utilities are both publicly and privately owned, and they own and operate over 50% of the nation's electric generating capacity. They participated actively in the Environmental Protection Agency's (EPA's or the Agency's) rulemaking proceeding which defined the "best" technology for existing and new sources in the steam electric industry,[3] appeared as amici curiae before the Fourth Circuit in both *du Pont* cases,[4] and also sought Fourth Circuit review of the regulations governing their own industry in *Appalachian Power Co.* v. *Train*.[5]

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[1] The Electric Utilities on whose behalf this brief is filed are listed *infra* pp. 23-25.

[2] E. I. du Pont de Nemours & Co., *et al.*, v. Train, Nos. 74-1261, *et al.*, 8 E.R.C. 1718 (4th Cir., March 10, 1976).

[3] Proposed regulations for the steam electric industry were published on March 4, 1974, 39 Fed. Reg. 8294. Final regulations were promulgated seven months later, 39 Fed. Reg. 36186 (October 8, 1974).

[4] E. I. du Pont de Nemours & Co., *et al.* v. Train, 528 F.2d 1136 (4th Cir. 1975) (*du Pont I*); *du Pont II*, *supra* note 2. In their briefs in these consolidated cases, Electric Utilities urged resolution of the jurisdictional issue independent of the questions regarding the Administrator's authority under sections 301 and 304(b) of the Federal Water Pollution Control Act, 33 U.S.C. §§ 1251 *et seq.* (Supp. IV, 1974) (FWPCA or the Act). Electric Utilities' arguments focused on the effect of the regulations and the necessity for flexibility in application of EPA's existing and new source regulations.

[5] Nos. 74-2096, *et al.* (4th Cir., July 16, 1976) (*Appalachian Power*). The Fourth Circuit's opinion is set forth in the Appendix (hereinafter App.) to this brief. It should be noted that Electric Utilities, in part responding to the court's invitation, have filed a motion for modification and clarification of certain parts of that opinion. If this motion is granted, the opinion as reported may differ in minor respects from that in the Appendix.

Electric Utilities have a narrow but vital interest in this case. Their position is simple: EPA's authority to implement the FWPCA standards[6] through general rules does not abrogate its obligation to heed the statutory standard of "best" technology in each case. If rigid application of a general regulation would contravene the statute in a specific situation, the rule cannot be validly applied to that situation. Thus, the application of the Agency's general regulations defining "best" technology for classes of existing and new sources requires a "safety valve" to deal with anomalous situations. This reasoning is reflected in the Fourth Circuit's holdings in *du Pont II* that EPA's regulations are "presumptively applicable" and that the new source regulations must include a "safety valve."[7] It is also consistent with recognized principles of administrative law and the regulatory scheme established by the FWPCA.

Apart from the fundamental principles which make a "safety valve" a necessary corollary of rules of general applicability, the factual record developed in the electric utility industry rulemaking established, for that industry, the need for the flexibility that a "safety valve" would provide. More than perhaps any other industry, the electric utility industry's production, location, and design options for new plants are severely

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[6] FWPCA §§ 301, 306. For convenience, all references will be to the section numbers of the FWPCA rather than the United States Code; citations to both appear in the Table of Citations.

[7] *du Pont II*, Slip Op. at 18-20, 8 E.R.C. at 1722.

constrained. Its production requirements, and thus the need for new power plants, are dictated by its obligation to provide adequate and reliable electric service. Technological constraints (*e.g.*, transmission capability) leave only a limited number of sites available for these plants. Site selection and plant design involve inevitable economic and environmental trade-offs with long-term consequences. Water pollution controls, for example, can exacerbate, both directly and indirectly, air pollution, solid waste, land use, and water supply problems.[8]

Congress recognized in the FWPCA the necessity that "best" technology take into account economic and environmental consequences. Sound environmental planning demands that the inevitable trade-offs be aimed at the socially optimal use of our limited national resources.

If Congress' command in the FWPCA for "best" technology is to be fulfilled in the electric utility industry, and in other industries, it is essential that permit applicants be afforded an opportunity to show that EPA's categorical new source standards should not be blindly applied in inappropriate cases.

Electric Utilities have vigorously asserted these fundamental legal principles and practical realities before the Agency and the courts. Their extensive comments on EPA's proposed steam electric regulations

[8] Some control devices result in direct air emissions; other treatment processes leave a solid residue. In some cases control mechanisms also reduce plant efficiency, with the result that more fuel must be extracted and consumed to produce the same net amount of electricity for the public. Thus, in addition to the obvious economic impact on consumers, reduced efficiency leads to increased air emissions and increased demand for basic fuels.

demonstrated both the immense diversity within this vital public service industry and the practical impossibility of EPA's foreseeing all of the factual circumstances to which its general rules will apply. Although apprised of these circumstances, EPA nonetheless failed to adopt a variance provision for new sources, apparently in the mistaken belief that a congressional desire for national uniformity demands undeviating rigidity. EPA established a categorical set of single number and "no discharge" standards for all new sources and provided no exception for those cases in which application of the rules would be inappropriate.[9]

As amici below, Electric Utilities argued in an unavoidably abstract context, since the record of EPA's electric utility rulemaking was not before the court, that EPA's regulations are only "presumptively applicable." The Fourth Circuit essentially adopted Electric Utilities' position in its *du Pont II* decision. As petitioners in *Appalachian Power,* Electric Utilities reiterated the necessity for flexibility in the concrete factual context of EPA's steam electric industry rulemaking record.

One month ago, on July 16, 1976, the Fourth Circuit reaffirmed its *du Pont II* holdings in *Appalachian Power,* an opinion that gave further insight into its reasoning on this issue.[10] The court sustained Electric Utilities' positions that (1) the courts of appeals have jurisdiction to review EPA's existing source regulations under section 509(b)(1) of the FWPCA,[11] (2)

[9] See 39 Fed. Reg. at 36201, 36204, 36207 (1974).

[10] The court also decided additional issues not raised in the instant case.

[11] Slip Op. at 8 n.12, App. at 6a n.12.

EPA's existing and new source regulations are only "presumptively applicable" in permit proceedings,[12] and (3) EPA should be required to adopt a limited "escape clause" for applying its new source standards.[13] Petitioners in No. 75-1473 and Cross-Petitioner in No. 75-1705 now challenge holdings identical to those of the Fourth Circuit in *Appalachian Power*.[14] Electric Utilities believe that this Court should reject these challenges and affirm the decision of the Fourth Circuit.

Electric Utilities essentially agree with the Fourth Circuit's resolution of the jurisdictional issue. However, since another amicus is supporting the Fourth Circuit's jurisdictional holding, Electric Utilities will address only the Fourth Circuit's holdings that (1) EPA regulations are "presumptively applicable" and (2) EPA must include an "escape clause" in its new source regulations.

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[12] *Id.* at 16, App. at 11a.

[13] *Id.* at 16-19, App. at 11a-14a.

[14] Although petitioners in *du Pont I* and *du Pont II* sought writs of certiorari on the question of the court of appeals' jurisdiction to review the existing source regulations, from their briefs it appears that they believe that the Fourth Circuit's assertion of jurisdiction on this case should be affirmed on the basis of a "pendent jurisdiction" theory. Brief for Petitioners at 12-13, *du Pont II;* Brief for Petitioners at 94-96, *du Pont I.*

ARGUMENT

I. THE FOURTH CIRCUIT'S RULINGS REGARDING THE "PRESUMPTIVE APPLICABILITY" OF EPA'S REGULATIONS AND THE CONSEQUENT NECESSITY FOR A "SAFETY VALVE" IN APPLYING THOSE REGULATIONS ARE PREMISED UPON AND SUPPORTED BY ESTABLISHED JUDICIAL DOCTRINE.

Many federal regulatory statutes authorize regulatory agencies to implement qualitative statutory standards, such as the FWPCA's "best technology" standards, through rules of general applicability.[15] Such standards in authorizing legislation circumscribe the power of the particular agency and define the congressional ends toward which the exercise of rulemaking authority must be directed.[16] In establishing uniform regulatory criteria which implement qualitative statutory standards, an agency must rely in large part upon generalized assumptions and conclusions. In complex factual areas general assumptions and conclusions may not always hold true in specific instances. As a result, valid general rules, when applied in particular

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[15] *See, e.g.*, Federal Communications Act of 1934, 47 U.S.C. § 303 (1970) (authorizing the Federal Communications Commission to engage in certain specific activities "as public convenience, interest, or necessity requires"); Natural Gas Act, 15 U.S.C. § 717d(a) (1970) (authorizing the Federal Power Commission to "determine the just and reasonable rate, charge, classification, rule, regulation practice, or contract" to be observed by natural gas companies); Food, Drug and Cosmetic Act, 21 U.S.C. § 341 (1970) (authorizing the Secretary of the Food and Drug Administration to take certain specific types of actions whenever, in his judgment, such actions "will promote honesty and fair dealing in the interest of consumers").

[16] *See generally* Carter v. Carter Coal Co., 298 U.S. 238 (1936); Schechter Poultry Corp. v. United States, 295 U.S. 495 (1935); Panama Refining Co. v. Ryan, 293 U.S. 388 (1935); *see also* South Terminal Corp. v. EPA, 504 F.2d 646 (1st Cir. 1974).

cases, may be inconsistent with, or even contrary to, the statutory standards which must govern the agency's actions.

This Court has long recognized the distinction between the validity of a statute on its face and its validity as applied, and it has permitted challenges to both. As the Court stated in *United States* v. *Carolene Products Co.*: "[W]e recognize that the constitutionality of a statute, valid on its face, may be assailed by proof of facts tending to show that the statute as applied . . . is without support in reason . . . ."[17] In other words, a person has the right to challenge the application of a statute to his activities and to have his claim heard. Just as statutes are bounded by constitutional limits, so are regulations bounded by the statutory standards they were promulgated to implement. Thus, just as an individual has the right to challenge the constitutional validity of a statute as applied to his situation, so must he also have the right to challenge the *statutory* validity of a regulation as applied to his particular situation. An agency, like a court, must consider such narrow but crucial challenges when made at the time the rules are applied to the individual.[18] The Fourth Circuit's holding that EPA's regulations are "presumptively applicable" is an affirmation of this principle.[19]

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[17] 304 U.S. 144, 153-54 (1938).

[18] *Cf.* WAIT Radio v. FCC, 418 F.2d 1153 (D.C.Cir. 1969). This limited right to seek an exception for the anomalous situation is clearly distinguished from the permissible imposition of statutory time limits on the individual's right to challenge the general validity of a generic rule. See *infra* pp. 9-11.

[19] The regulatory structure and judicial review provisions of the FWPCA are fully consistent with this principle. See *infra* Part II.

In holding that EPA's "best" technology regulations for new and existing sources are only "presumptively applicable," the court below recognized the principle that flexibility in the application of general rules is most sorely needed in emerging, highly complex regulatory areas. It is in these areas that discrete situations are most likely to exhibit facts significantly different from those upon which the general rules are premised. Application of the general rules to such factual situations may produce results which are "without support in reason"[20] and contrary to the statutory standards the rules are designed to implement. To prevent such an occurrence and to preserve the right of an interested party to challenge the application of EPA's regulations to his situation, the Fourth Circuit properly concluded that EPA's new source regulations must include an "escape mechanism", and then proceeded to review the validity of those regulations on the assumption that they are only "presumptively applicable."[21]

In *United States* v. *Allegheny-Ludlum Steel Corp.*,[22] *Permian Basin Area Rate Cases*,[23] *United States* v. *Storer Broadcasting Co.*,[24] and *National Broadcasting Co.* v. *United States*,[25] this Court was asked to rule

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[20] *Carolene Products*, 304 U.S. at 154.

[21] *du Pont II*, Slip Op. at 18-20, 8 E.R.C. at 1722. In *Appalachian Power* the Fourth Circuit premised its validation of certain of EPA's challenged actions on the court mandated "safety valve." Slip Op. at 80-82, App. at 52a-53a.

[22] 406 U.S. 742 (1972).

[23] 390 U.S. 747 (1968).

[24] 351 U.S. 192 (1956).

[25] 319 U.S. 190 (1943).

upon the validity of general regulations which translated qualitative statutory standards into objective terms.[26] In reviewing these regulations the Court recognized that an administrative agency has the authority to waive its rules when their application would produce results inconsistent with the statutory objective. This principle was most recently articulated in *Allegheny-Ludlum*:

> It is well established that an agency's authority to proceed in a complex area . . . by means of rules of general application entails a concomitant authority to provide exemption procedures in order to allow for special circumstances."[27]

These decisions, however, go beyond mere recognition of the existence of waiver authority. They are also premised upon recognition that when an agency exercises its authority to proceed in complex areas by a general rule which, as applied, may be inconsistent with the overriding statutory standard, it has an obligation to exercise its "concomitant authority" to entertain waiver requests. Thus, in *Storer* and *Allegheny-Ludlum* the fact that the agencies had exercised their "concomitant authority" through promulgation of waiver provisions was a crucial factor in the Court's sustaining the validity of the generally applicable reg-

[26] In *Allegheny-Ludlum*, the challenged rules required that unloaded railroad freight cars be returned in the direction of the line owning the cars; in *Permian* they set maximum area rates for natural gas producers' interstate sales; in *Storer* they provided that no license to operate a television station would be granted to an applicant who already owned five or more such stations; and in *National Broadcasting* they related to "chain broadcasting" problems.

[27] 406 U.S. at 755.

ulations."[28] In *National Broadcasting* and *Permian* the Court placed similar reliance upon the agencies' express policies of granting waiver under certain conditions."[29]

It was in *National Broadcasting* that the Court first emphasized the importance of flexibility in sustaining an agency's general rules:

> The problems with which the Commission attempted to deal could not be solved at once and for all time by rigid rules-of-thumb. The Commission therefore did not bind itself inflexibly to the licensing policies expressed in the Regulations. In each case that comes before it the Commission must still exercise an ultimate judgment whether the grant of a license would serve the "public interest, convenience, or necessity." If time and changing circumstances reveal that the "public interest" is not served by application of the Regulations, it must be assumed that the Commission will act in accordance with its statutory obligations.[30]

Later in *Storer*, the Court again recognized the "*necessity* for flexibility" to sustain general rules it had previously emphasized in *National Broadcasting*.[31] It held that the Federal Communications Commission's explicit waiver provision supplied the requisite flexibility to validate the general regulations challenged there.[32]

[28] *Storer*, 351 U.S. at 202 n.10, 204-05; *Allegheny-Ludlum*, 406 U.S. at 748, 755.

[29] *National Broadcasting*, 319 U.S. at 207, 225; *Permian*, 390 U.S. at 764, 771-72.

[30] 319 U.S. at 225.

[31] 351 U.S. at 204 (emphasis added).

[32] The Court in *Storer* found that the waiver provision present

The Court in *Permian* also stressed the need for flexibility in the application of rules.[33]

Lower court decisions have continued to rely upon the "necessity for flexibility" concept first enunciated in *National Broadcasting*. In *WAIT Radio* v. *FCC*, the United States Court of Appeals for the District of Columbia stated:

> The agency's discretion to proceed in difficult areas through general rules is intimately linked to the existence of a safety valve procedure for consideration of an application based on special circumstances. . . . [A] system where regulations are maintained inflexibly without any procedure for waiver poses legal difficulties.[34]

The Second Circuit recently relied upon this principle in upholding the limited variance provision contained in EPA's existing source regulations under the

in that case was crucial to the regulations' legality not only because it provided the required flexibility as to application but also because it left open an avenue through which an applicant for a license might exercise the right—guaranteed him in the organic statute—to an adjudicatory hearing on his application. This supplemental holding did not result in any less emphasis on the need for flexibility in applying regulations. The Court said, "In the *National Broadcasting* case we called attention to the necessity for flexibility in the Rules there involved," 351 U.S. at 204, then quoted that earlier decision at some length, and concluded, "That flexibility is here under the present § 309(a) and (b) [waiver provisions] and the FCC's regulations," *id.* at 205. This language and this Court's continued attention to the need for flexibility indicate that the "adjudicatory right" facet of *Storer* does not supplant or even undermine the "necessity for flexibility" facet. See *infra* note 55. Each is an independent, valid ground upon which a court may insist on a "safety valve" to uphold agency regulations.

[33] *Permian*, 390 U.S. at 770-73.

[34] 418 F.2d 1153, 1157 (D.C. Cir. 1969).

FWPCA. Rejecting the argument that such a variance provision is an "impermissible derogation from the Congressionally mandated goal of national uniformity," the court observed: "Without variance flexibility [in those regulations], the [regulatory] program might well founder on the rocks of illegality."[35] The decision of the court below is merely another expression of that principle and fully comports with the decisions of this Court.

II. THE FOURTH CIRCUIT'S HOLDINGS ARE CONSISTENT WITH, AND COMPELLED BY, THE PROVISIONS OF THE FWPCA.

The FWPCA establishes a two-stage regulatory structure—the first, adoption of general rules for classes and categories of discharge sources;[36] the second, application of those rules to individual dischargers through a permit program.[37] Judicial review is provided but it must be secured at the time of agency action; with limited exception, judicial review is foreclosed thereafter.[38]

This structure assures that general national pollution control regulations will be subject to expeditious application and enforcement. Matters resolved in the rulemaking cannot be re-litigated in the permit pro-

[35] NRDC v. EPA, No. 74-1258, 8 E.R.C. 1988, 1992 (2nd Cir., April 28, 1976).

[36] FWPCA §§ 304(b), 306.

[37] FWPCA § 402(a), (b).

[38] Under section 509(b)(1) of the FWPCA an action to review the Administrator's promulgation of effluent limitations must be brought within ninety days, unless the action is based solely on "grounds which arose" after the ninetieth day.

ceedings. Matters resolved at either of these stages cannot be re-litigated in civil and criminal enforcement proceedings.[39] The heart of the controversy before the Court is: Which matters are resolved at each stage and, in particular, at what time and in what manner are anomalous individual factual situations to be considered in the FWPCA regulatory scheme?

A. The EPA rulemaking process

Though largely inexperienced in wastewater treatment technologies, EPA was commanded by section 306 to establish, within nineteen months, new source standards for twenty-seven industrial categories. The standards for each category were to reflect effluent reductions achievable with "best available demonstrated control technology, processes, operating methods or other alternatives."[40] Defining best technology for *twenty-seven industries* in *nineteen months* is not a schedule which is conducive to the promulgation of finely tuned standards.[41] Nevertheless, the legislative

[39] Section 509(b)(2) provides that actions of the EPA Administrator reviewable under section 509(b)(1) "shall not be subject to judicial review in any civil or criminal proceeding for enforcement." Sections 309 ("Federal Enforcement") and 505 ("Citizen Suits") authorize enforcement actions in federal district courts. Under section 309 the court may assess fines of up to $10,000 per day for each violation in civil actions and, in criminal actions, it may impose penalties of up to $25,000 per day and/or one year's imprisonment. The $10,000 civil fines may also be levied in section 505 citizen suits.

[40] FWPCA § 306(a)(1), (b)(1).

[41] The Agency's task was made even more difficult by the district court's action in NRDC v. Train, No. 1609-73, 6 E.R.C. 1033 (D.D.C. November 15 and 27, 1973), *aff'd in part*, 510 F.2d 692 (D.C. Cir. 1975), which mandated promulgation of effluent guidelines within a time period clearly inconsistent with consideration

history indicates that section 306 regulations were to establish a mechanism for uniform application of technology requirements[42] which, according to the Act's text, must be both "best"[43] and "demonstrated" for types, sizes, and classes of new sources within an industrial category.[44] Theoretically, if EPA could have foreseen all of the factual settings to which these standards would apply, it could have identified the numerous potentially different types, sizes, and classes of sources within each industrial category and then defined "best technology" for each. But realistically, EPA could not and did not attempt this approach.

As for the electric utility industry, EPA used general assumptions regarding, for example, source water, industrial process, climatology, siting and capital costs and, on this basis, identified hypothetical "costs," "non-water quality environmental impacts," and "energy requirements"[45] associated with alleg-

of all of the factual variations within each industrial category. *See* Hooker Chemicals v. Train, No. 74-1687, 8 E.R.C. 1961, 1965 (2d Cir., April 28, 1976). Since EPA's new source standards were based on the same factual record as the effluent guidelines, and EPA had thus determined to issue them concurrently, the practical effect of the court's holding was to put the Agency under a mandate to issue its new source standards within the same restricted timeframe.

[42] S. Rep. No. 1236, 92d Cong., 2d Sess. 127-28 (1972); H.R. Rep. 911; 92d Cong. 2d Sess. 110-11 (1972); S. Rep. No. 414, 92d Cong. 1st Sess. 57-60 (1971).

[43] See *infra* note 45.

[44] Section 306(b)(2) provides that the Administrator "may distinguish among classes, types, and sizes within categories of new sources" in establishing new source standards.

[45] Section 306(b)(1)(B) requires EPA to consider these facts in establishing any section 306 standards. Their consideration is crucial in determining whether a particular technology is "best." Portland

edly "demonstrated" technologies. These hypothetical impacts and costs, in turn, were compared and balanced to select a single definition of "best" technology for either very broad classes or even an entire industry.[44] Thus, EPA's standards did not reflect the factual variations within each industrial category and, therefore, could not represent the best technology for each facility within that category.

B. The dilemma facing the lower court

Faced with the reality of EPA rulemaking, the Fourth Circuit in *du Pont II* was presented with the following dilemma: What should be its role in reviewing standards which EPA asserted must be uniformly applied when it was impossible for the court, because of EPA's generalized assumptions, to determine whether those standards would reflect the best technology in individual cases?[45] To resolve the dilemma, the court had two alternatives:

1. Vacate the regulations and demand that the agency establish "best technology" standards for

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Cement Ass'n v. Ruckelshaus, 486 F.2d 375, 385-86 n.42 (D.C. Cir. 1973), *cert. denied*, 417 U.S. 921 (1974). Moreover, section 306 provides that any "no discharge" standard be adopted only if "practicable." The legislative history indicates that this language requires the Administrator "to show that the water quality benefits to be achieved from no discharge would be commensurate with the cost of such a no discharge standard." 118 CONG. REC. 33760 (1972) (remarks of Mr. Wright).

[44] *See, e.g.*, the focus on "national-scale" problems in EPA's statements of consideration for the proposed and final steam electric industry regulations. 39 Fed. Reg. at 8294 (1974); 39 Fed. Reg. at 36187 (1974).

[45] This dilemma has troubled other courts charged with reviewing EPA's regulations. *See, e.g.*, Hooker Chemicals v. Train, No. 74-1687, 8 E.R.C. 1961, 1965 (2d Cir., April 28, 1976).

the almost innumerable classes, types, and sizes of sources which might be built in the future; or

2. Review the regulations on the basis of the assumptions, conclusions, and explanations in the rulemaking record but refuse to decide whether the rules would be valid as applied in all individual factual cases.

The Fourth Circuit chose the latter approach and held that it would review the regulations on the basis that they were only "presumptively applicable."[46] In so holding, the court gave effect to the congressional desire for uniformity by assuring that all sources with the characteristics assumed by EPA in its generic rulemaking would incorporate the best technology defined by the standard. Quite properly, however, it did not confuse Congress' desire for meaningful national uniformity with Procrustean intent. Rather, it held that the applicability of general rules, though not their validity for the class or category, could be challenged in individual permit proceedings.[47]

C. The Fourth Circuit's resolution of this dilemma comports with the FWPCA

As discussed in Part I, the Fourth Circuit's holding is fully supported by decisions of this Court in-

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[46] *du Pont II*, Slip Op. at 20, 8 E.R.C. at 1722. Certain of the more flagrant errors in EPA's use of generalized assumptions are subject to resolution in section 509(b)(1)(A) and (E) with review proceedings. However, more subtle errors associated with possible geographical variables or other unique circumstances cannot be resolved in such proceedings. *Compare, e.g., Appalachian Power*, Slip Op. at 43-57, App. at 30a-37a (effect of EPA's regulations on utilities located in arid areas) *with id.* at 80-81, App. at 52a-53a (unique problems of a utility located in an urban area).

[47] *du Pont II*, Slip Op. at 18-19, 8 E.R.C. at 1722.

volving agency regulations in less complex areas than those involved here. Moreover, the language and regulatory structure of the Act are fully consistent with the Fourth Circuit's conclusion that a claim of arbitrary action in the application of EPA's regulations "may be considered in court review under § 509 (b)(1)(E) of the issuance or denial of a permit . . . [where] specific facts may be presented and the problem will be actual rather than hypothetical." [50]

Under section 509(b)(1)(A) of the Act, it is the "action of the Administrator in promulgating" these regulations which may be challenged in the courts of appeals. Any such challenge to the validity of EPA's regulations must be initiated within ninety days of issuance of EPA's rulemaking order, and with limited exception, the validity of the rules is not thereafter subject to review. Given the statutory timing of such review proceedings, generally with only a notice and comment rulemaking record, it would be impossible for any court to determine in an appeal of the general rules whether the challenged regulations, when subsequently applied in individual cases, would result in requirements which fulfill Congress' call for best technology. Accordingly, the court below was correct in concluding that in section 509(b)(1)(A) appeals only issues relating to the "general validity" of EPA's regulations can be resolved.[51]

The court's holdings are also supported by the permit program and related judicial review provision

[50] *Id.* at 24, 8 E.R.C. at 1723. *See* NRDC v. EPA, No. 74-1258, 8 E.R.C. 1988 (2d Cir., April 28, 1976).

[51] *See du Pont II*, Slip Op. at 23, 8 E.R.C. at 1723.

of the Act." Those provisions establish a mechanism for the courts to resolve questions involving application of the general rule in specific cases. As this Court noted in *EPA* v. *California*, EPA's generally applicable effluent limitations and standards (for classes and categories of discharge sources) are to be "transform[ed] into the obligations of an individual discharger" " through section 402 permits—permits that can be issued only after opportunity for public hearings and in accordance with procedures that secure full public participation." In short, the "applicable requirements" mentioned in section 402 are to be ascertained in the permit proceedings. Thus, it is at this stage that the general regulations are to be applied to individual dischargers and it is at this stage that questions as to the general rules' applicability can and must be heard."

In permit proceedings, the individual discharger will be able to ascertain if special circumstances exist

[52] FWPCA §§ 402, 509(b)(1)(F).

[53] 44 U.S.L.W. 4781, 4782 (June 7, 1976).

[54] FWPCA §§ 101(e), 308(b), 402(b)(3), (j); 40 C.F.R. §§ 124.31-124.37 (1975); 40 C.F.R. §§ 125.31-125.35 (1975).

[55] EPA's new source regulations apply only to sources which are constructed on or after the date the proposed regulations were published. FWPCA § 307(a)(2). As a result, it is possible that the regulations will be applied in the future to new source owners who did not participate in the rulemaking since they were not then engaged in the particular industrial activity. Under these circumstances, mechanical application of new source regulations in permit proceedings, without any opportunity for a hearing on special facts and circumstances in appropriate cases, could create procedural due process problems. *Cf.* Weinberger v. Hynson, Westcott & Dunning, 412 U.S. 609, 638 n.1 (1973) (Powell, J., concurring); *Storer*, 351 U.S. at 205. See *supra* note 32.

which bring into question the validity of the rule as applied since the statute particularizes the factors that EPA must consider in adopting its regulations, and the rulemaking record leading to their adoption discloses the assumptions upon which they are based. When special facts and circumstances are placed before the agency responsible for issuing the permits, it can evaluate them in light of the statutory factors and rulemaking record and determine whether the facts justify a departure from the general rule in order to comply with the statutory standard. If such a departure is justified by the particular facts in an individual case, the permit issuer must tailor a precise effluent limitation meeting the section 306 requirement that each new source incorporate the "best available demonstrated technology."[56] After EPA has issued a permit or vetoed a permit issued by a state

[56] Section 306(e) provides that it is unlawful to operate a new source in violation of an "applicable" standard of performance. Once a source-specific section 306 performance standard is included in a permit, however, it supplants the regulations' prescribed standard, which is no longer applicable, and "[c]ompliance with [the] permit . . . shall be deemed compliance . . . with sections . . . 306. . . ." FWPCA § 402(k). Under section 309, violation of a permit condition "implementing" section 306 is subject to civil and criminal enforcement.

In its cross-petition, the government implied that section 306(d) somehow supported EPA's position that section 306 regulations must be applied in each permit without regard to special circumstances. Electric Utilities are at a loss to see the relevance of that section to the issue in this case. Section 306(d) merely provides that, if a source is constructed to meet the requirements of section 306, more stringent pollution control requirements cannot be imposed for ten years. The existence of a "safety valve" in no way relieves the discharger from compliance with section 306; it merely provides for the individual specification of applicable requirements in exceptional cases.

granted section 402 permit authority,[57] judicial review is clearly available under section 509(b)(1)(F). In such a review proceeding the courts will have an adequate record upon which to determine whether the agency's application, or waiver, of the rule was arbitrary and capricious on the facts and circumstances of the individual case.[58]

Finally, as the court below noted, "[t]he balance of general rule and narrow exceptions assures all possible uniformity without sacrifice of the flexibility needed to adjust for disparate plants in dissimilar circumstances."[59] The adoption of a variance provision with express criteria for entertaining, determining, and acting upon exception requests is needed to assure that the "obligations of individual dischargers" which are specified in permits will, in fact, uniformly reflect

[57] State-issued section 402 permits are subject to EPA review; they cannot be issued if EPA objects to their issuance "as being outside . . . the requirements of this Act." FWPCA § 402(d)(2).

[58] State-issued permits may be reviewable in state courts of general jurisdiction pursuant to state law. It is less clear whether they are also reviewable in federal courts of appeals. Section 509(b)(1)(E) provides for review of the action of the Administrator in "approving or promulgating any effluent limitation or other limitation under section . . . 306 . . . ." The Administrator's failure to object to the issuance of a permit which included conditions that the state determined were necessary to meet the requirements of section 306 may constitute "approval" of a section 306 effluent limitation within the meaning of section 509(b)(1)(E). *Compare* S. Rep. No. 1236, *supra* note 42 at 147-48 *with* S. Rep. No. 414, *supra* note 42 at 85 *and* S. 2770, 92d Cong., 1st Sess. § 509(b)(1) (1971). The only court of appeals to address the issue, however, has held that the Administrator's tacit approval of a state-issued permit is not subject to review under section 509(b)(1). Shell Oil Co. v. Train, No. 75-2070 (9th Cir., September 22, 1975), cited in Shell Oil Co. v. Train, No. C-75-1291, 8 E.R.C. 2018, 2021 (N.D. Cal., March 17, 1976).

[59] *du Pont II*, Slip Op. at 18-19, 8 E.R.C. at 1722.

the "best available demonstrated technology." [60] Such a provision would ensure that the permit-issuing agencies could not ignore, through slavish application of EPA's regulations, the statutory standard of section 306. It would not unduly complicate the regulation of new sources under section 402. Properly drawn, the provision could require that one seeking a variance allege facts showing that the regulations in question are inapplicable to his situation. The permit-issuing agency would be required to accept evidence on variance requests only from one who had made the requisite showing of inapplicability on the face of his request. Even then, he would have the burden of proving the "inappropriateness of the regulations as applied to him." [61]

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[60] Sections 301(c) and 316(a) of the FWPCA neither obviate the need for, nor reflect congressional disapproval of, the inclusion of such a variance clause in EPA's new source regulations. Under section 301(c) of the FWPCA, the owner of an existing source may be excused from complying with the 1983 best technology limitations *if* compliance is beyond the "economic capability" of the source and *if* a limitation can be established which will result in "reasonable further progress" toward the elimination of discharges. Under section 316(a) any thermal discharge limitation (including those necessary to meet water quality standards) may be relaxed *if* the source owner demonstrates that less stringent limitations will assure "protection and propagation of a balanced indigenous population of fish, shellfish and wildlife." Thus, both of these provisions establish single factor exceptions which override the general requirement that a source incorporate the best technology available. The type of variance at issue in this case would not excuse compliance with discharge limitations reflecting the best technology; it would only excuse a source from compliance with a *regulation* which, as applied, did not reflect the "best technology." See *supra* note 56 and accompanying text.

[61] Slip Op. at 15, App. at 10a; *see* Gulf Oil Corp. v. Hickel, 435 F.2d 440 (D.C. Cir. 1970).

In summary, given the practical inability of the EPA or the reviewing courts to foresee all the circumstances to which these rules will apply, some flexibility in their application is necessary to account for the unforeseen, exceptional cases. Without flexibility, dischargers could be subjected to inappropriate requirements and denied any meaningful opportunity to show the inappropriateness of those requirements under the particular facts of their respective cases. Thus, the Fourth Circuit's interpretation of the Act was correct from both legal and practical standpoints.

CONCLUSION

For the foregoing reasons the decision of the Fourth Circuit in *du Pont II* should be affirmed.

Respectfully submitted,

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THE DAYTON POWER AND LIGHT COMPANY
OHIO EDISON COMPANY
THE TOLEDO EDISON COMPANY
NIAGARA MOHAWK POWER COMPANY
DEPARTMENT OF WATER AND POWER OF THE CITY OF LOS ANGELES

August 16, 1976

APPENDIX

UNITED STATES COURT OF APPEALS
FOR THE FOURTH CIRCUIT

Nos. 74-2096, 74-2188, 74-2196,
74-2236, 74-2263, 74-2264,
74-2265, 74-2268, 74-2269,
74-2270, 74-2286, 74-2298,
74-2312, 74-2313, 74-2315,
74-2339, 74-2340, 74-2341,
74-2343, 74-2365, 74-2366,
74-2396, 75-1014, 75-1021,
75-1022, 75-1047, 75-1074,
75-1078, 75-1091, 75-1094,
75-1095, 75-1198, 75-1199,
75-1201, 75,1223, 75-1255,
75-1345, 75-1346, 75-1347

APPALACHIAN POWER COMPANY, BALTIMORE GAS AND ELECTRIC COMPANY, CAROLINA POWER & LIGHT COMPANY, DUKE POWER COMPANY, MONONGAHELA POWER COMPANY, OHIO POWER COMPANY, POTOMAC EDISON COMPANY, POTOMAC ELECTRIC POWER COMPANY, SOUTH CAROLINA ELECTRIC & GAS COMPANY, VIRGINIA ELECTRIC AND POWER COMPANY, WEST PENN POWER COMPANY,
Petitioners

v.

RUSSELL E. TRAIN, as Administrator
ENVIRONMENTAL PROTECTION AGENCY,
Respondent

ALABAMA POWER COMPANY, et al

JERSEY CENTRAL POWER & LIGHT COMPANY,
METROPOLITAN EDISON COMPANY and
PENNSYLVANIA ELECTRIC COMPANY,
Intervenors

ON PETITIONS FOR REVIEW OF ACTIONS OF THE ADMINISTRATOR OF THE ENVIRONMENTAL PROTECTION AGENCY*

Argued September 23, 1975 Decided July 16, 1976

* The following Petitions for Review, all naming Train as Respondent, were consolidated:

74-2188—National Rural Electric Cooperative Association
74-2196—Georgia Power Company
74-2236—Tampa Electric Company
74-2263—Indiana & Michigan Electric Company
74-2264—Indiana-Kentucky Electric Corporation
74-2265—Illinois Power Company
74-2268—Pacific Gas and Electric Company
74-2269—San Diego Gas & Electric Company
74-2270—Southern California Edison Company, a California corporation
74-2286—Mississippi Power Company
74-2298—Arkansas Power & Light Company, and Arkansas-Missouri Power Company
74-2312—Gulf Power Company
74-2313—Alabama Power Company
74-2315—Boston Edison Company, Holyoke Water Power Company, Montaup Electric Company, New England Power Company, Public Service Company of New Hampshire, Western Massachusetts Electric Company
74-2339—Consolidated Edison Company of New York, Inc.
74-2340—Pennsylvania Power & Light Company
74-2341—Philadelphia Electric Company
74-2343—Florida Power & Light Company
74-2365—Dairyland Power Cooperative
74-2366—Commonwealth Edison Company
74-2396—Mississippi Power & Light Company, Louisiana Power & Light Company, and New Orleans Public Service, Inc.
75-1014—Western Farmers Electric Cooperative, a corporation
75-1020—Alabama Electric Cooperative, Inc.
75-1021—Buckeye Power, Inc., Indiana and Michigan Power Company, Kentucky Power Company, Ohio Electric Company, Ohio Power Company, Ohio Valley Electric Corporation

Before RIVES** and BREITENSTEIN***, Senior Circuit Judges, and WIDENER, Circuit Judge.

George C. Freeman, Jr. and (Hunton, Williams, Gay and Gibson on brief) for Appalachian Power Company, Boston Edison Company, Florida Power and Light Company, New

75-1022—Brazos Electric Power Cooperative, Inc.
75-1047—Connecticut Light & Power Company, The Hartford Electric Light Company, Western Massachusetts Electric Company, Long Island Lighting Company, New York State Electric & Gas Corporation (Intervenors)
75-1074—Corn Belt Power Cooperative
75-1078—Texas Utilities Generating Company, Dallas Power & Light Company, Texas Electric Service Company, Texas Power & Light Company
75-1091—Public Service Electric & Gas Company
75-1094—Union Electric Company
75-1095—Central Iowa Power Cooperative
75-1198—South Texas Electric Cooperative, Inc.
75-1199—Central Power & Light Company and West Texas Utilities Company
75-1200—State of Texas
75-1201—Houston Lighting & Power Company
75-1202—Tennessee Valley Authority
75-1203—Brazos River Authority
75-1223—Cincinnati Gas & Electric Company, Cleveland Electric Illuminating Company, Columbus & Southern Ohio Electric Company, Dayton Power & Light Company, Ohio Edison Company, Toledo Edison Company
75-1255—Union Electric Company, a Missouri Corporation
75-1345—Platte River Power Authority
75-1346—City of Lamar, a municipal corporation of the State of Colorado, and The Lamar Utilities Board
75-1347—Tri-State Generation and Transmission Association, Inc.

** Of the Fifth Circuit, sitting by designation.

*** Of the Tenth Circuit, sitting by designation.

England Power Company, Pacific Gas and Electric Company, Public Service Company of New Hampshire, San Diego Gas and Electric Company, Southern California Edison Company, and Virginia Electric and Power Company; Edward J. Sack and (Joyce P. Davis on brief) for Consolidated Edison Company of New York, Inc.; Linda Aaker for State of Texas; Turner T. Smith, Jr., (William A. Anderson, II, Andrea S. Bear, Hunton, Williams, Gay and Gibson on brief) for Appalachian Power Company; Charles B. McGregor and (Beard and Kultgen on brief) for Brazos River Authority; Spencer C. Relyea, (Worsham, Forsythe and Sampels on brief) for Texas Utilities Generating Company; Robert W. Harmon for Appalachian Power Company, Indiana and Michigan Electric Company, Indiana Michigan Power Company, Kentucky Power Company, Ohio Electric Company, Ohio Power Company; (Dale G. Stoodley on brief) for Boston Edison Company; (William H. Green on brief) for Florida Power and Light Company; (Philip H. R. Cahill on brief) for New England Power Company; (John B. Gibson on brief) for Pacific Gas and Electric Company; (Russell A. Winslow on brief) for Public Service Company of New Hampshire; (Guenter S. Cohn on brief) for San Diego Gas and Electric Company; (Charles R. Kocher on brief) for Southern California Edison Company; (John Goldsum, Mary Joe Carroll, Clark, Thomas, Winters and Shapiro on brief) for Central Power and Light Company and West Texas Utilities Company; (Erle Nye on brief) for Dallas Power and Light Company; (J. A. Gooch, Cantey, Hanger Gooch, Cravens and Munn on brief) for Texas Electric Service Company; (H. Sam Davis, Jr., Burford, Ryburn and Ford on brief) for Texas Power and Light Company; Ray McDevitt, Attorney, Environmental Protection Agency, Thomas F. Bastow, Attorney, United States Department of Justice, (Wallace H. Johnson, Assistant Attorney General, Edmund B. Clark, Alfred T. Ghiorzi, Attorneys, United States Department of Justice, Robert V. Zener,

General Counsel, Bruce M. Diamond, Attorney, Environmental Protection Agency, on brief) for Respondent, Russell E. Train.

WIDENER, Circuit Judge:

This action is brought under § 509(b)(1)[1] of the Federal Water Pollution Control Act [Act][2] and seeks review of certain regulations promulgated by the Environmental Protection Agency (EPA) pursuant to its authority under §§ 301, 304, 306 and 316(a).[3] These regulations establish limitations on the discharge of heat from steam electric generating plants into navigable waters.[4] The petitioners in this action include seventy members of the United Water Act Group [UWAG], who include both publicly and privately owned companies and collectively own and operate over 50% of the nation's electric generating capacity.

The regulations here under review implementing §§ 301, 304, and 306 were first issued in preliminary form on March 4, 1974.[5] The proposed regulations under § 316(a) of the Act were issued on March 28, 1974.[6] Following a comment period, EPA issued its final regulations on Octo-

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[1] 33 USC § 1369.

[2] 33 USC § 1251 et seq.

[3] 33 USC §§ 1311, 1314, 1316, and 1326(a).

[4] Navigable waters under the Act are defined as "the waters of the United States, including the territorial seas." 33 USC § 1362(7). In addition, it should be noted that certain of the regulations challenged also regulate ash disposal and construction runoff from power stations.

[5] 40 CFR Part 423; 39 Fed. Reg. 8294 et seq. (1974).

[6] 40 CFR Part 122; 39 Fed. Reg. 11434 et seq. (1974).

ber 8, 1974.[7] Prior to that time, however, the first of the petitions in this case was filed with the Court.[8]

The Act establishes as the national goal the elimination of discharges of pollutants into navigable waters by 1985.[9] Among the substances defined as a pollutant by Congress was heat.[10] It was recognized, however, that a basic technological approach to water quality control could not be applied in the same manner to the discharge of heat as to other pollutants since the temporary localized effects of thermal discharges might, in certain instances, be beneficial.[11] Thus, Congress included within the Act § 316(a) which modifies the requirements of both sections 301 and 306 as they pertain to thermal discharges from point sources.

In the instant case, the petitioners challenge the regulations generally and specifically.[12] For the sake of clarity, we will first consider the general challenges and then discuss those applying to specific regulations.

STANDARD OF REVIEW

Before addressing the issues raised by the Industry, it is important to note that the standard of review imposed

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[7] 40 CFR Part 423; 39 Fed. Reg. 36186 et seq. (1974) as amended at 40 Fed. Reg. 7095 (1975); 40 CFR Part 122; 39 Fed. Reg. 36176 et seq. (1974).

[8] The EPA brief states final regulations were announced to the press on October 2, 1974, the same day as the initial petition was filed in this court.

[9] Section 101(a)(1); 33 USC § 1251(a)(1).

[10] Section 502(6); 33 USC § 1362(6).

[11] 1 Leg. His. 264.

[12] No question is raised as to the jurisdiction of the court to hear this case, the parties being of opinion that jurisdiction may properly be invoked pursuant to § 509(b)(1). This is consistent with our opinion in *duPont* v. *Train*, No. 74-2237 (4th Cir. 1975), and, thus, need not be considered here.

upon the court is narrowly prescribed by Section 706(2)(A) of the Administrative Procedure Act.[13] That section requires a finding that the administrative action in question is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law" before it may be set aside. The scope of review thus permitted was discussed by this court in *Appalachian Power Co.* v. *EPA*, 477 F2d 495 (4th Cir. 1973). There, we stated:

> "Courts require that administrative agencies 'articulate the criteria' employed in reaching their result and are no longer content with bare administrative *ipse dixits* based on supposed administrative expertise. . . . While an agency may have discretion to decide, '[D]iscretion to decide does not include a right to act perfunctorily or arbitrarily'; and, in order for a Court to make a critical evaluation of the agency's action and to determine whether it acted 'perfunctorily or arbitrarily', the agency must . . . 'explicate fully its course of inquiry, its analysis and its reasoning'." 477 F2d at 507.

While the court may not substitute its judgment for that of the agency, the grounds upon which the agency acted must be clearly disclosed in, and substantiated by, the record. *Citizens to Preserve Overton Park* v. *Volpe*, 401 US 402, 416 (1971); *FTC* v. *Sperry and Hutchinson*, 405 US 233, 249 (1972); *duPont* v. *Train*, No. 74-1261, et al (4th Cir. 1976). In evaluating the course of conduct employed by the EPA, we must, of course, bear in mind that Congress vested that agency with the power to choose among alternative strategies. *South Terminal Corp.* v. *EPA*, 504 F2d 646, 655 (1st Cir. 1974). Nevertheless, because of the "drastic impact" of the statute, see *Appalachian Power Co.*, p. 503, and the anticipatory review provisions of § 509(b)(1) of the Act which require review of the EPA's

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[13] 5 USC § 706(2)(A).

regulations under §§ 301, 302 and 306 within 90 days of their issuance rather than at the time of application to a particular point source, EPA must ordinarily be held to a standard of at least literal compliance with the provisions of the Act.

THE REGULATIONS

Under the final regulations promulgated by EPA, all existing generating plants of 500 megawatts or more which came on line on or after January 1, 1970 must backfit closed-cycle cooling systems by July 1, 1981. All existing units, regardless of size, that began or will begin operation on or after January 1, 1974, are likewise subject to the backfit requirements. Limited exemptions are provided, however, based upon land availability, salt drift impact, and interference with commercial aviation.[14] Finally, all new plants are made subject to narrowly limited no-discharge thermal limitations without exception.[15] The regulations also approve of the use of existing cooling lakes by existing but not new generating units.[16] Cooling ponds but not lakes are deemed acceptable for all units. By definition, cooling water impoundments which impede the flow of a navigable stream are cooling lakes while those which do not are cooling ponds.[17]

There are presently three basic methods of closed-cycle cooling systems which may be employed to meet the requirements set forth in EPA's regulations. These are: (a) evaporative cooling systems such as wet cooling towers and spray systems; (b) cooling ponds and lakes; and (c) dry

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[14] 40 CFR §§ 423.11(d), 423.13(1), (m), as amended by 40 Fed. Reg. 7095-96 (1975).

[15] 40 CFR §§ 423.15(1), 423.25(1).

[16] 40 CFR § 423.13(1)(3), § 423.15(1)(2), as amended by 40 Fed. Reg. 7095.

[17] 40 CFR § 423.11(m), (n).

cooling towers. EPA itself has indicated, however, that this latter method of cooling, which employs huge radiator-like devices, cannot generally be applied to large electrical generating units due to the significant loss of plant efficiency which results.[18]

The most commonly used form of evaporative cooling is the wet cooling tower, either natural or mechanical draft. Natural draft cooling towers are enormous concrete cylinders, which may be 350 to 550 feet in diameter and 300 to 600 feet tall. [19] The bottom one-tenth of the tower is filled with slats and baffles to break up the water and expose a larger surface area to the air flow so as to increase evaporation. Warm water from the condenser is pumped to the top of the tower, there discharged, and cooled by moving air as it falls to the bottom. It is there collected and returned to the condenser.

Mechanical draft evaporative cooling towers are composed of modules (each a miniature tower) approximately 70 by 40 feet, placed side by side for distances up to 600 feet. Large top or side mounted fans on each cell provide the air movement for a forced draft to aid evaporation as the warm water drops to the bottom of the tower.

Spray ponds are also used for cooling. They consist of artificial ponds or canals into which water is sprayed. The water is cooled by evaporation resulting from the contact with the natural air currents during the spraying and after collection in the pond.

Cooling ponds and lakes represent the other practical systems. They normally consist of artificially constructed bodies of water built by damning [sic] a natural watershed. The condenser water is fed into the cooling lake or pond

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[18] 39 Fed. Reg. 8296.

[19] The height is necessary to create the natural draft required to draw the air through the tower from bottom to top.

where it is cooled through evaporation. It is then recycled to the condenser.

Regulatory Challenges

(a) *The Act's Regulatory Scheme—Flexibility* v. *Uniformity*

Petitioners argue that the steam electric regulations are excessively rigid in that EPA has prescribed nationally uniform effluent limitations rather than "guidelines for effluent limitations" as required by § 304 of the Act. In essence, they contend that there is no authority under the Act for the issuance of uniform effluent limitations. In large part, this controversy centers around whether the regulations in question were issued under § 301 or § 304. This issue was raised and considered by this court in the case of *duPont* v. *Train,* Nos. 74-1261, et al. (4th Cir. 1976).

In that case, we concluded that the EPA was permitted to establish limitations under § 301 which would be generally applicable to point sources by categories. Slip opinion, p. 12 et seq. We further concluded that the agency could validly impose limitations in terms of single numbers rather than a range of numbers. Slip opinion, p. 16. We went on to state, however, that "[f]or all sources, both existing and new, we believe that the solution which most nearly satisfies congressional intent is recognition that the regulations are presumptively applicable to permit applications." Slip opinion, p. 18. Thus, the issuer of a permit under § 402 may consider whether a particular applicant is to be held strictly to the confines of the agency's regulations. The burden of proof remains upon the applicant, however. Only after he has established the inappropriateness of the regulations as applied to him, for example, employing the generic factors of §§ 304, 306 or any specific variance clauses promulgated thereunder, need the permit issuer go beyond the regulations. Of course, the permit

issuer does not have unreviewable discretion in determining whether limitations prescribed under a particular regulation should be deemed inapplicable to any individual point source. Under § 402(d)(2), EPA may prevent the issuance of any permit to which it objects. Thus, through the exercise of this veto power, the agency may insure that the permit grantors give proper recognition to the need for uniformity in the application of the Act while at the same time recognizing variables which may exist from location to location and plant to plant.

Because we are of opinion that the regulations are only presumptively applicable, we think they are not so rigid as to compel an inflexible application of the Act. Accordingly, we reject this portion of Industry's argument.

(b) *The Variance Clause*

The petitioners have also pressed a number of complaints about the adequacy of the variance clause in the steam electric regulations.[20] That provision allows for modification of the 1977 effluent limitations applicable to a particular point source upon a showing that factors relating to that point source are fundamentally different from those considered in the establishment of the applicable single number limitation. Specifically, Industry contends that: (1) the variance clause is too narrow because it is activated only by "fundamentally different factors"; (2) it should apply to 1983 and new source performance standards; and (3) it should include consideration of economic impact.

As we noted in *duPont,* Nos. 74-1261, et al, provisions for variances are appropriate to the regulatory process. This is particularly so in the case of regulations having presumptive applicability throughout the nation. The factors to be taken into consideration, however, ought ordinarily to be at least as broad as the factors relied upon in estab-

[20] 40 CFR § 423.12(a).

lishing the limitation if the provision is to have meaning. In the instant case, EPA has said that a variance from the 1977 standards will be granted only where "the factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from those factors considered in establishing the guidelines." Thus, only technical and engineering factors, exclusive of cost, may be considered in granting or denying a variance.[21] Based upon the Act taken as a whole, we are of opinion that such a variance clause is unduly restrictive and, accordingly, 40 CFR § 423.12(a), must be set aside and remanded for further consideration.[21a]

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[21] 39 Fed. Reg. 28926-27, 30073 (1974), interpreting 40 CFR § 423.12(a). The interpretations of the variance regulations were on August 2 and 13, 1974, while the steam generating regulations were filed October 7, 1974. The variance provisions construed at 39 Fed. Reg. 28926-7 and 30073 (1974) and those here construed are in the same language.

[21a] In setting aside these regulations, the court perceives no inconsistency with the action taken in *duPont* v. *Train*, No. 74-1261 (4th Cir. 1975). In that case, we refused to review the variance provisions involved there on the grounds that their administration in practice was a matter of speculation. *Slip Op.* at 20. In the instant case, however, EPA, in the administration of these provisions, has recited that the agency's position with regard to variance applications is to the effect that "[t]he cost of control is not an element in granting the variance." 39 Fed. Reg. 28926-7 (August 2, 1974). Again, on August 13, 1974, EPA published a memorandum from the Assistant Administrator for Enforcement and General Counsel to all regional administrators which stated in part:

> "We have been asked whether this provision allows issuance of NPDES permits which deviate from the guidelines as a result of economic factors.
>
> "The answer is 'no'. The provision is limited to adjustments based on 'factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger'.
>
> "The reference to 'other such factors' must be read in light of the previous factors listed; the intent here was to include factors of a technical and engineering nature, rather than to broaden the scope of the provision to include economic factors."
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> • • • • •
>
> "Thus the law compels a reading of the effluent guidelines to exclude economic factors from the provision for individual adjustment of effluent limitations."
>
> 39 Fed.Reg. 30073.

Thus, it would appear that, unlike the case in *duPont*, the administration of these regulations is not a matter of speculation. As such, they are properly the subject of review at this time.

We begin with the observation that § 301(c) of the Act provides that EPA may grant a variance from the 1983 standards to any point source upon a showing that "such modified requirements (1) will represent the maximum use of technology within the economic capacity of the owner or operator; and (2) will result in reasonable further progress toward the elimination of the discharge of pollutants." Clearly, the Act, in its regulatory plan, contemplates increasingly stringent control measures for existing and new sources culminating in the elimination of the discharge of all pollutants into navigable waters by 1985. We are of opinion that the initial phase of these regulations, the 1977 standards and the subsequent new source limitations, were not intended to be applied any less flexibly than the final Phase II—1983 requirements. Thus if such factors as the economic capacity of the owner or operator of a particular point source is relevant in determining whether a variance from the 1983 standards should be permitted, they should be equally relevant when applied to the less stringent 1977 standards as well as the new source requirements.

In addition, we note that both § 304 (1977) and § 306 (new sources) provide that the factors to be taken into consideration in determining the 1977 and new source standards include not only the engineering aspects of the various types of control technology, but also (1) the total

cost of application of such technology (cost of achieving such effluent reduction) and (2) the resulting non-water quality environmental impact (including energy requirements). The EPA has offered no reasoned explanation for limiting the variance clause to considerations of technical and engineering factors only. Certainly the adverse non-water quality environmental impact which may result from the strict application of the agency's effluent limitations to a particular plant is as significant as the technological difficulties which may be encountered. The same may be said for a consideration of energy requirements.

Upon reconsideration, then, EPA should come forward with a meaningful variance clause applicable to existing as well as new sources, taking into consideration at least statutory factors set out in §§ 301(c), 304(b)(1)(B) and 306(b)(1)(B).[22]

(c) *Section 315 Report*

Industry next argues that § 301(b)(2)(A) precludes a no-discharge limitation as a 1983 standard absent achievability findings based upon available information including that developed pursuant to § 315(a). This later provision creates a National Study Commission to review and report on "all of the technological aspects of achieving, and all aspects of the total economic, social, and environmental effects of achieving or not achieving the effluent limitations and goals . . . for 1983. . . ."[23] Since this report was not

[22] In requiring that EPA give weight to the relevant statutory factors in developing a subsequent variance provision, we in no way intend to imply that EPA's regulations must provide for a detailed cost-benefit analysis at the permit granting stage. As we indicated in *duPont*, Nos. 75-1261, et al, an overall cost-benefit analysis for each category or subcategory satisfies the mandate of § 304 in this regard. The variance provision should, however, allow the permit issuer to consider significant cost differentials of the particular point source involved.

[23] 33 USC § 1325(a). Apparently (so far as we are now advised)

published at the time of the promulgation of the regulations, it is Industry's position that EPA has improperly promulgated the thermal limitations in question.

The legislative history of § 315 indicates, however, that Congress did not intend that the Commission report be a condition precedent to the establishment of the 1983 standards. It appears, rather, that the report was intended to provide an independent evaluation of the economic, social, and environmental aspects of the regulatory plan to be obviously used in Congressional review of the agency's functions. A part of the explanation of Senator Muskie filed with his filing of the Conference Report of the joint House-Senate conference concerning the Act is directly in point:

> "The House amendment provided a study by the National Academy of Sciences of social, economic and environmental implications of 'best available demonstrated technology' and of any effluent limits which would require the 'elimination of the discharge of pollutants'. Under the House amendment, such a study would have been completed in two years and would have been a condition precedent to any requirements beyond January 1, 1976.
>
> "The Conference agreement does not require a subsequent action of Congress to trigger those aspects of the program which are commonly referred to as Phase II and beyond. The requirement to achieve effluent limitations based on the best available technology and the elimination of discharge of pollutants are automatic on enactment."[24]

a report of the Commission was voted on March 2, 1976. See BNA Environmental Reporter, March 5, 1976, for comment, p. 1865-66, and text, p. 1890-91.

[24] 1 Leg. His. 174-75.

These remarks are supported by the joint Explanatory Remarks by Conference Committee which indicates that the House version of § 315 conditioning implementation of Phase II standards upon receipt of the Commission report was rejected.[25] We are accordingly of opinion that EPA properly promulgated no-discharge limitations under § 301 (b)(2)(A) prior to the submission of the § 315 report.

(d) *Thermal Backfit Requirements*

(1) *1983 Requirements—Reduction for Existing Units*

Industry contends that EPA's 1983 thermal backfit requirements for existing units are invalid because the agency failed to balance the overall social benefits to be derived from its regulations against their social costs. In essence, these regulations, which purport to establish effluent reduction levels attainable by the application of the best available technology economically achievable, require all existing generating units placed in service after December 31, 1973, as well as all units of 500 megawatts or greater coming on line after December 31, 1969, to backfit closed cycle cooling.[26] Petitioners argue that the 1983 effluent limitation standards set forth in the Act[27] reflect an intent on the part of Congress that social benefits of pollution control be measured against their costs in choosing among alternative strategies.

EPA, on the other hand, takes the position that the language of the Act pertaining to the 1983 standards requires

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[25] 1 Leg. His. 319.

[26] 40 CFR §§ 423.11(d), 423.13(l),(m), *as amended by* 40 Fed. Reg. 7095-96 (1975).

[27] 33 USC § 1311(b)(2)(A) provides in part:

"Not later than July 1, 1983, effluent limitations . . . shall require application of the best available technology economically achievable . . . which shall result in reasonabe further progress toward the national goal of eliminating the discharge of all pollutants. . . ."

no balancing of social benefits against social costs. Moreover, the agency asserts that even if the Act were held to so require, it has, in its rulemaking, analyzed the benefits of the challenged regulations and found them to be worth the associated costs. It further asserts that it agrees with its environmental contractor, Energy Resources Company (ERCO), when it states that "benefits cannot be properly assessed within the present state of the Art." We disagree with EPA's (and partially with Industry's) assertions, and, accordingly, set aside and remand for further consideration §§ 432.13(1)(m).

In *duPont,* Nos. 74-1261, et al, we rejected Industry's contention that benefits derived from a particular level of effluent reduction must be quantified in monetary terms, and such contention is rejected here. This reflects the simple fact that such benefits often cannot be reduced to dollars and cents. Nevertheless, EPA is under a statutory duty to determine whether, in fact, its regulations for 1983 will "result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants. . . ." 33 USC § 1311(b)(2)(A). Accordingy, the agency must consider the benefits derived from the application of its effluent reduction requirements in relation to the associated costs in order to determine whether, in fact, the resulting progress is "economically achievable," and whether the progress is "reasonable."

EPA argues, however, that it has, in fact, assessed the benefits to be derived from its regulations and has therefore satisfied the requirements of 33 USC § 1311(b)(2)(A). In support of this contention, EPA refers to the table below.[28] According to that table, EPA calculated the incre-

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[28] This table appears in both EPA's preliminary and final development documents and was available to Industry during the comment period allowed on the proposed regulations.

INCREMENTAL COST OF APPLICATION TO MECHANICAL DRAFT EVAPORATIVE COOLING TOWERS TO NONDEW UNITS (BASIS 1970 DOLLARS)

Type Unit	Remaining Life Years	Incremental Production Costs		Incremental Capital Costs		Additional Fuel Consumption		Generation Capacity Reduction	
		% of Base Cost	Cost/Benefit $/[MWH]$_T$ x10	% of Base Cost	Cost/Benefit $/[MWH]$_T$ x10	% of Base Fuel Consumption	Cost/Benefit $[MHW]_F/[MHW]_T$ x100	% of Base Generating Capac.	Cost/Benefit $MW/[MWH]_T$ x10^7
I. Nuclear	30-36	13	4	12	1	2	3	3	1
(All base-load)	24-30	14	5	12	1	2	3	3	1
	18-24	15	5	12	2	2	3	3	1
	12-18	16	6	12	2	2	3	3	2
	6-12	19	7	12	5	2	3	3	3
	0-6	30	11	12	10	2	3	3	9
Average excl. 0-6		15	5	12	2	2	3	3	1.6
II. Fossil-Fuel									
A. Base-Load	30-36	11	4	12	1	2	3	4	1
	24-30	12	4	12	1	2	3	4	1
	18-24	13	4	12	1	2	3	4	1
	12-18	14	5	12	2	2	3	4	2
	6-12	16	5	12	3	2	3	4	3
	0-6	22	7	12	8	2	3	4	9
Average excl. 0-6		13	4	12	1.6	2	3	4	1.6
B. Cyclic	30-36	14	5	14	2	2	3	4	1
	24-30	15	5	14	2	2	3	4	1
	18-24	16	6	14	2	2	3	4	2
	12-18	18	6	14	3	2	3	4	3
	6-12	20	8	14	5	2	3	4	5
	0-6	30	10	14	15	2	3	4	14
Average excl. 0-6		17	6	14	3	2	3	4	4
C. Peaking	30-36	40	20	16	7	2	3	4	6
	24-30	40	20	16	8	2	3	4	7
	18-24	45	20	16	10	2	3	4	9
	12-18	50	30	16	13	2	3	4	17
	6-12	60	30	16	21	2	3	4	11
	0-6	100	60	16	61	2	3	4	54
Average excl. 0-6		47	24	16	10	2	3	4	11

18a

19a

Assumptions: Type Unit	Base Prod. Cost mills/kwh	Base Cap. Cost $/kw	Annual Boiler Capacity Factor	Heat Rate Btu/kwh	Heat Loss Btu/kwh	Heat Converted Btu/kwh	Heat to Cooling Water Btu/kwh	Cost Replacement Capac. $/kw
I. Nuclear	6.50	150	0.70	10,500	200	3,500	6,800	90
II. Fossil-Fuel								
A. Base-Load	6.34	120	0.77	10,500	500	3,500	6,500	90
B. Cyclic	8.35	120	0.44	11,500	500	3,500	7,500	90
C. Peaking	12.5	120	0.09	12,500	500	3,500	8,500	90

Subscripts: F indicates electrical equivalence of fuel consumed, and T indicates electrical equivalence of heat rejected to cooling water. Both are calculated at 0.293 x 10^{-6} [MWH]/Btu.

mental production costs, capital costs, fuel consumption and capacity reduction which would result from the application of closed-cycle cooling at existing plants of various ages. These incremental values were then compared to the amount of heat kept out of the water by such systems. Based upon the resulting cost-effectiveness ratios, EPA concluded that the thermal control technology there analyzed resulted in more favorable effluent reduction benefits when applied to newer and larger generating units. The analysis also indicated the cost per unit of electricity which accrued as a result of applying closed-cycle cooling to the various generating units. Based upon this study, EPA contends it limited coverage of its backfit regulations to units having baseloads of 500 megawatts or more and coming on line after 1970. Smaller units put into operation after 1973 were likewise required to adopt closed-cycle cooling systems.[29]

Industry challenges EPA's reliance upon these figures on the ground that they do not indicate whether the regulations will result in reasonable further progress toward the national goal. We agree. EPA's study merely establishes the cost-effectiveness of installing mechanical draft cooling towers at individual plant sites. It in no way indicates whether, in light of the associated costs, application of such systems will result in reasonable effluent reduction levels.

In response to this, EPA cites the report of its environmental contractor, ERCO, which it claims satisfactorily analyzes the environmental benefits and risks associated with the various alternatives which were before it. The foundation of this report was apparently a random sample taken of various power companies throughout the country. Based upon this sample, the report concludes that if a generating unit uses less than 30% of a stream's flow, there

[29] 40 CFR § 423.11(d).

will be no ecological danger. If as much as 70% of the stream flow is used more than five percent of the time, however, there will be a high risk of such danger. Between these two extremes, the report concludes that there is a medium risk of danger. Yet, nowhere in the report does ERCO state upon what basis it reached this conclusion. Moreover, ERCO goes on to assume that § 316(a) exemptions will issue to all low risk, half of the medium risk, and none of the high risk installations. Again, however, the reason why the exemption would apply to the assumed proportion of installations is not stated. Perhaps it is a result of ERCO or EPA site studies; perhaps not. We are left to guess. By the same token, we note that the low risk category, for example, does not take into consideration the effect of increases in the temperature of the water discharged into the river by the individual generating units. Is this an oversight or do the results of site by site studies justify the exclusion of the very element, temperature, with which the statute is concerned? Again, the record contains no answer. Simply stated, then, the ERCO report upon which EPA now seeks to rely fails to explain and document the basis for the numerous assumptions made and relied upon in its analysis. As such, we cannot say, based upon this report, whether, in fact, EPA's effluent reduction regulations will result in reasonable further progress toward the elimination of artificial sources of heat from the nation's waters.

Moreover, we further note, finding it to be of some significance, that the record is replete with allusions to the effect of heat upon aquatic life; damage to eggs; different effects on adult and juveniles; the growth of algae; interrupted migration; the thresholds of aquatic communities; differences between streams, lakes and estuaries; are to mention but a few. Yet, despite agreement that the literature is full of learned papers on the subject at hand, EPA contends that the state of the art is not such that the incremental benefits of heat removal from the discharge of

generating plants can be predicted. The references throughout the record to the effects of heat on aquatic life, not unreasonably, cause us to consider this position with a certain degree of caution. The references are simply too numerous and are stated by too many people on both sides who are ostensibly qualified to speak. An illustration is a colloquy between Dr. Brooks of the United Water Act Group and Dr. Schneider of EPA:

> "DR. BROOKS: I would like then, as part of what could have been an answer to that question—I heard earlier that there were numerous shortcomings in existing data available from operating thermal discharges. I think most of us will agree that it is certainly pointed out in the 104 T studies that these deficiencies do exist.
>
> Does EPA believe that there is sufficient data to arrive at any predictions of thermal benefits or benefits at all?
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> DR. SCHNEIDER: Is this with respect to specific sites or in general?
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> DR. BROOKS: Both.
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> DR. SCHNEIDER: That is a very broad question. We could write text books on the subject."

Assuming that EPA's conclusion is correct, that the state of the art is such that the incremental effects of heat are not known with any degree of certainty, the least EPA could have done would have been to articulate what the state of the art was and why, according to scientific opinion, predictions could not be made. Even assuming that it might not be possible to articulate with reasonable certainty the achievability of the benefits to be derived from a specified amount of heat removal, it seems to us that the expectancy might be stated, for if there is no expectancy of benefits to aquatic life, is the expenditure of billions of dollars justified under any standard?

We, of course, recognize that EPA may fairly assume that a reduction in the amount of heat discharged will, as a general rule, result in some benefit to the environment. The question is, however, whether the reduction results in reasonable further progress toward the elimination of pollutants. This is ultimately a matter within the sound discretion of EPA itself. Yet, in determining whether a particular reduction level is, in fact, reasonable, EPA must compare the cost of achieving that level of reductions (which it has done) and the ecological benefits to be derived therefrom (which it has not done) with the benefits and costs associated with alternative levels of heat reduction.

At the very least, on the best information available, the ecological benefits expected from the ordered reduction should be stated, and, if impossible so to do, EPA should state why. It may well be, for example, that a 90% reduction in thermal pollution at a cost of $5 billion is entirely reasonable even when it is shown that an 80% reduction would cost but $2 billion, for it is possible that the elimination of the additional 10% in total heat discharged would have positive environmental effects which would far outweigh the additional $3 billion in cost. By the same token, if no tangible environmental benefits will accrue by increasing the thermal reduction level from 80% to 90%, the additional expenditure of $3 billion might be considered unjustified. Thus, in choosing among alternative strategies, EPA must not only set forth the cost of achieving a particular level of heat reduction but must also state the expected environmental benefits, that is to say the effect on the environment, which will take place as a result of reduction,[30]

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[30] By tangible environmental benefits, we mean something more than BTU's of heat rejected. Certainly, to exaggerate to make the point, it could not seriously be contended that a reviewing court could say that an overall reduction of, say, 10 BTU's of heat discharged into the nation's rivers at a cost of $5 billion represents a reasonable reduction level. So we see that it is only when the re-

for it is only after EPA has fully explicated its course of conduct in this manner that a reviewing court can determine whether the agency has, in light of the goal to be achieved, acted arbitrarily or capriciously in adopting a particular effluent reduction level. Were this not the case, EPA would be free to impose ever more stringent and costly control measures which, while incrementally reducing the level of thermal discharge, would not result in any reasonable improvement in the "chemical, physical, and biological integrity of the Nation's waters." 33 USC § 1251.

It should be made clear, however, that our remand here is very narrow in scope since we do not disapprove the general principle of requiring installation of cooling devices on a part of the planned and existing electrical generators in the country. EPA's conclusion that the size of the generator and the year of its first service operation offers the best means of determining which units will be required to backfit seems to us to be reasonable and subject to no infirmity now apparent calling for reconsideration. Moreover, we are not now prepared to say the particular sizes of generators and dates of service which EPA has adopted as the breaking points for ascertaining the necessity of backfitting cooling devices on existing or planned equipment are unreasonable on the record before us.

Yet, while we are unable to say that EPA has note acted reasonably, neither are we able to say it has not acted "perfunctorily or arbitrarily," *Appalachian Power* v. *EPA*, supra, p. 507, for the "criteria used in reaching . . . [the]

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duction level and the asociated costs are compared with the environmental benefits to be expected that a critical evaluation of EPA's actions can be made. In this respect, § 304(b)(1)(B), for example, requires "consideration of the total cost of application of technology in relation to the effluent reduction benefits" for 1977 standards. Had Congress intended merely to require a standard of the percentage of heat removal, it would have provided for a simple equation and the drafters would have done so.

result" has not been stated other than by way of assumptions rather than by the reasoning of those qualified in the field. As was the case in *Tanner's Council of America* v. *Train*, No. 74-1740 (4th Cir. 3/10/76), there is simply no evidence in the record that would reveal the reasonableness of EPA's conclusions. To sustain these regulations on the present record, this court would have to trust completely EPA's conclusions. Judicial review must be based on something more than trust and faith in EPA's expertise, however. *duPont* v. *Train*, Nos. 74-1261, et al (4th Cir. 3/10/76), at p. 45.

On remand, then, EPA must state the benefits especially to aquatic life, for the various alternatives considered if that can be done. If these benefits cannot be stated with any degree of certainty, EPA will state the expected benefits according to whatever scientific opinion it relies upon, fully explicating the basis, including the opinion, upon which it relies. If no expected benefits can be stated, EPA must state why they cannot be and the scientific opinion which supports that conclusion.

(2) *Economic Achievability of EPA's Thermal Backfit Requirements*

Industry also attacks EPA's backfit requirements on the grounds that they will impose a staggering burden on the power industry.[31] According to EPA, its thermal controls

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[31] Industry, in its brief, contends that it "will be hard pressed, if it is able at all, to finance its future public obligations." While we are sympathetic to the plight of the electric utilities, the mere fact that these regulations will bring added pressure to bear is not a sufficient basis upon which this court may conclude that EPA has acted arbitrarily. Only if Industry establishes that EPA's conclusions as to the economic achievability of these backfit requirements are erroneous under the standards of review to be applied in such cases may the regulations be set aside. The fact that there may be great cost associated with compliance is a political judgment of Congress and not subject to review except under the very narrow

will require $5.2 billion in additional funding. Industry, on the other hand, estimates the cost at close to $7.4 billion.[32] The agency contends that even if this higher figure is accepted, capital cost to electric utilities will increase by only 7% between now and 1983.

In support of its position that Industry can, in fact, secure the necessary funding to meet the backfit requirements, EPA relies primarily upon an economic analysis of its final effluent standards done by Temple, Baker, and Sloane, Inc. (Temple).[33] Temple's final report, which was submitted in December of 1974, noted that prior to the 1973 Arab Oil embargo, the electric utility industry was planning to spend more than $205 billion for capital equipment. Due to a decline in growth,[34] it found that current estimates of such expenditures should have been revised downward to $179 billion. Temple then took the position that if

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standards associated with constitutional questions and review of administrative decisions.

[32] Industry does not explain in its brief the basis for its higher cost estimate nor does it challenge EPA's method in ariving at its $5.2 billion figure. It also claims at least $6.5 billion additional costs (EPA says $4.3 billion) for construction work in progress and chemical controls and the expense of the Clean Air Act compliance of $13.3 billion.

[33] We note in passing that this report was submitted after the final regulations were issued. It was, however, an up-to-date of an earlier report and Industry raises no issue as to its timeliness. Since the regulations are to be remanded, Industry will be afforded an opportunity to offer any objections which it may have to Temple's assumptions and conclusions.

[34] The growth rate of electricity demand fell from its historic level of 7.2% to 5.5% following the Arab oil boycott. Industry contends that growth is returning to the historic level which may substantially undermine EPA's basic assumptions. On remand, EPA should fully evaluate this contention in developing revised regulations, taking into account the latest economic data and forecasts for the industry as well as the nation.

Industry could have raised the additional $25 billion required to finance its original growth estimates, it "should experience little trouble meeting the added requirements to comply with the final guidelines."

In addition, EPA suggests that the unique relationship that exists between government and the utilities lessens the degree to which Industry must contend with the vagaries of the marketplace. The agency points out that certain factors governing the industry's future growth such as cash flow, return on capital, and demand growth, are subject to direct manipulation by governmental agencies. EPA further asserts that:

> "[B]ecause the industry plays an important role in determining the actions of state and federal regulatory commissions, to the extent that they themselves promote such innovative practices as peak power pricing to flatten peak demand, they can be a controlling factor in determing their own future capital needs. If the electric utility industry were genuinely doubtful about its ability to meet its future capital needs, it would now be promoting rate structures conducive to a flattening of peak demand curves, and a reduction in the rate of growth, rather than the type of rate structure currently in widespread use, which encourages greater consumption and the wasting of energy." EPA Br. at 66.

Industry disputes both of these assertions. First, it contends that rate regulation is often, in practice, a constraint rather than an aid in efforts to compete for scarce capital. Moreover, Industry argues that despite EPA's contentions to the contrary, a reduction in demand brought on by the energy crisis and a general downward turn in the economy does not make available additional capital.

Since the EPA's backfit regulations have been set aside for further consideration, we find it unnecessary to pass on the validity of the agency's economic analysis. Before

any revised regulations are promulgated, however, we direct that EPA fully consider any economic changes which may have occurred in the money market or in the demand projections for the electric utility industry since these regulations were issued, and afford Industry an opportunity to comment upon its analysis.

(e) *Backfit Requirements for AEC Approved Nuclear Power Plants*

Industry next contends that EPA's summary rejection of an Atomic Energy Commission proposal that fifty-five nuclear power units which had completed environmental impact statements be exempted from the backfit requirements was arbitrary and capricious. The National Environmental Policy Act [35] requires every Federal agency to take into account the environmental impact of certain proposed actions. Pursuant to this mandate, the AEC's (now Nuclear Regulatory Commission) licensing process entailed, at every stage of review, an analysis of the economic, social, and environmental costs and benefits of proposed nuclear generating units.[36]

Following its NEPA review, the Commission concluded that there were approximately 70 units for which the environmental impacts of thermal effluents were not significant or sufficiently serious to warrant the cost of closed-cycle cooling. Fifteen of these units were found not to come under EPA's backfit requirements due to either age or size. The remaining fifty-five units would, however, have been required to install closed-cycle systems unless exempted. Accordingly, Dr. Dixy Lee Ray, Chairman of the AEC, wrote EPA requesting:

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[35] 42 USC § 4321 et seq.

[36] Since 1971, the AEC-NEPA review process has been governed by Appendix D to 10 CFR, Part 50. This was reinstated on July 18, 1974, in 10 CFR, Part 51. 39 Fed. Reg. 26279.

> "[A] special class in the steam-electric power plant category of point sources be established under section 304(b)(1) and 304(b)(2) of the FWPCA. As contemplated by the statute, the class would consist of steam-electric power plants of a certain type (nuclear power reactors) and age (those for which final environmental impact statements had been prepared by the AEC Regulatory Staff pursuant to section 102(2)(C) of NEPA prior to the effective date of the guidelines)."

In support of this request, Dr. Ray pointed out that the capital expenditures required to backfit closed-cycle cooling systems at these plants would approximate $2.1 billion in 1974 dollars. Escalation would increase that figure by 50% by the year 1983.

In response, Russell E. Train, Administrator of EPA, noted that a similar proposal was considered in preparing the preliminary guidelines but was rejected because "in the opinion of [EPA's] General Counsel, it would not be legally defensible." This is the only apparent explanation for EPA's action. The preamble to EPA's regulations does not discuss the question nor does EPA's Development Document or Economic Analysis.

Certainly, the bold assertion that AEC's proposal is "not legally defensible" is not a sufficient articulation of the criteria employed by EPA in reaching its decision. It does not permit the court to in any way satisfy itself that the agency engaged in reasoned decision-making. See, e.g., *Appalachian Power Co.* v. *EPA*, 477 F2d 495, 507 (4th Cir. 1973). Accordingly, EPA is directed upon reconsideration of its backfit regulations to fully evaluate the AEC's proposal and set forth its reasons for rejecting or accepting the proposed category in its revised regulations.[37]

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[37] EPA contends that an order that it reconsider the AEC's

In so directing, we do not imply that EPA must abdicate its authority over effluent reduction to the AEC or NRC. As the parties themselves point out, such abdication of authority has been repeatedly held invalid. See *Calvert Cliffs Coordinating Committee* v. *AEC*, 449 F2d 1109 (D.C. Cir. 1971); *Greene Co. Planning Bd.* v. *FPC*, 455 F2d 412 (2d Cir. 1972). We do require, however, that EPA "explicate fully its course of inquiry." *Appalachian*, supra, at 507.

(f) *Cooling Lakes as Best Available Technology*

Under 40 CFR § 423.15(1) and 40 CFR § 423.25(1), the discharge of heat by steam-elctric power plants classified as new sources is permitted only in "blowdown from recirculated cooling water systems," (e.g. cooling towers) and in "blowdown from cooling ponds." Existing units under 40 CFR § 423.13(1), on the other hand, are permitted to employ a variety of cooling techniques, including existing cooling lakes. Industry, as well as the State of Texas, contends that EPA's restrictions upon the use of existing and new cooling lakes is both arbitrary and capricious in light of the resulting increase in water consumption.[38]

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proposal would, at this time, be an empty gesture since EPA and the Commission have declared themselves to be in substantial agreement as to the fifty-five units in question. Despite the fact that a tentative EPA-NRC agreement may have been reached that none of these plants need backfit, we were informed by counsel for EPA at oral argument that no permits have yet been issued to these plants. Moreover, even if the permits had been issued, Industry is compelled by the anticipatory review procedures of § 509 of the Act to challenge the agency's failure to provide for a subcategory of nuclear power plants now or forego all review. Thus, we do not agree that the issue is moot.

[38] In addition to the industry petitioners and the State of Texas, the Brazos River Authority also joins in challenging this portion of the regulations. The Authority is an organization created under the laws of Texas and is charged with conserving the waters of the

EPA has defined "cooling lakes" as any "manmade water impoundment which impedes the flow of a navigable stream and which is used to remove waste heat from heated condenser water prior to recirculating the water to the main condenser." 40 CFR § 423.11(n). Cooling ponds, by way of contrast, include "any manmade water impoundment which does not impede the flow of a navigable stream and which is used to remove waste heat from condenser water. . . ." 40 CFR § 423.11(m).

This distinction takes on meaning when considered in light of EPA's interpretation of the term "navigable waters." According to the agency, all "[i]ntrastate lakes, rivers, and streams which are utilized by interstate travelers for recreational and other purposes; intrastate lakes, rivers and streams from which fish or shellfish are taken and sold in interstate commerce; and intrastate lakes, rivers and streams which are utilized for industrial purposes by industries for interstate commerce"[39] are navigable waters. At oral argument, counsel for EPA took the position that this includes not only the waters of natural streams, lakes and rivers, but also surface waters which diffuse themselves over the ground and follow no defined course or channel, gathering into no more definite body of water than a wet weather creek. We reject this assertion, being of opinion that, where possible, the collection and use of such surface waters as opposed to natural rivers, lakes and streams furthers the purpose of the Act in restoring and maintaining the "chemical, physical and biological integrity of the Nation's waters."[40]

Brazos River. It owns and operates two major reservoirs and has a third under construction. In addition, it owns the conservation storage is six federal reservoirs along the tributaries of the Brazos.

[39] 40 CFR § 125.1(p).

[40] 33 USC § 1251(a).

We nevertheless recognize that virtually every natural stream falls within this narrower view as to what constitutes "navigable waters." According to EPA's regulations, any impoundment which impedes the natural flow of any such stream would constitute a cooling lake and thus preclude it from use for cooling purposes.

Despite EPA's restrictions upon the use of cooling lakes, the agency's own Development Document specifically identifies such lakes as a form of closed-cycle cooling. It states:

> "The technological basis for best available technology economically achievable, and new source performance standards consist of closed-cycle evaporative cooling towers and cooling ponds, lakes and canals." [41]

Moreover, that document lists cooling lakes as one of the available technologies for achieving waste heat removal in closed or recirculated cooling systems.[42] As is there noted, such lakes "are similar in principle to open, once-through systems, but . . . are closed inasmuch as no significant thermal discharge occurs beyond the confines of the lake." [43]

So we see that EPA has itself recognized that cooling lakes represent an achievable method of closed-cycle cooling. In addition, the agency has deemed them to be the best practicable technology for existing generating units presently employing such lakes.

Despite the foregoing, EPA attempts to justify its limitations on the use of cooling lakes on the ground that it is obliged under the Act to ban all new discharges into existing or new lakes becaues they are navigable waters. We disagree. The Act contains no blanket requirement that all effluent discharges into navigable waters be eliminated. Rather, § 306(b)(1)(B) of the Act merely requires that EPA propose and public regulations establishing "standards of performance" for "new sources" within a list of "categories" of point sources, giving due regard at least to non-water quality environmental impact and energy requirements. The term "standard of performance" is defined as "a standard for the control of discharges of pollutants which reflects the greater degree of effluent reduction . . . including, where practicable, a standard permitting no discharge of pollutants." [44] Thus, where no discharge limitations are not practicable in light of the non-water quality impact or other such factors, the "best available" technology may, in fact, entail some discharge of heat into the Nation's waters.[45]

The EPA has itself recognized this in the case of existing generating units employing cooling lakes. Due to the fact that "the addition of recirculating systems to [existing] lakes would substantially increase water consumption," [46] the agency concluded that cooling lakes were

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[41] Development Document at 2.

[42] Development Document at 496.

[43] *Id.*

[44] 33 USC § 1316(a)(1).

[45] We similarly reject EPA's assertion that before any new discharge of heat may be permitted, there must be a showing under § 316(a) that such discharges will not endanger a balanced indigenous population of shellfish, fish and wildlife in and on the body of water. As Congressman Wright, a member of the Conference Committee considering the Act, stated in a letter to the Administrator:

> "Congress did not intend, with § 316(a) to relieve EPA of the duty of establishing categories of point sources of thermal discharges and evaluating in each category the effects of factors such as the cost of achieving effluent reductions and non-water quality impacts including energy requirements and water consumption."

We are of opinion that sole reliance upon § 316(a) in assessing whether new discharges would be appropriate would effectively preempt consideration of the statutory factors set forth in §§ 304(b)(2) and 306 for "best available" technology.

[46] Respondent's Brief at 77.

the best practicable technology. Industry contends that this same reasoning holds true for new units on existing lakes as well as units on newly constructed lakes. We agree.

EPA's § 104(t) report supports Industry's assertion that the use of cooling towers will result in a dramatic increase in water consumption. It concludes that "the evaporation resulting from a given thermal addition to a [cooling] lake is generally less than 50% of the evaporation that will result from similar thermal loading of a cooling tower."[47] In California alone, the use of cooling towers rather than lakes at all additional power plants projected to be on line by 1990 will create an annual water deficiency of nearly 2.2 million acre-feet;[48] more than double the 1970 prediction. In the Brazos River Basin of Texas, the consumptive use of water for cooling purposes resulting from the installation of cooling towers would increase by one and one-half to two times, according to some estimates. An unanswered argument at this stage of the proceeding is Governor Briscoe's (of Texas) letter to EPA: "The level of consumptive use of water that would be necessitated by implementing these proposed regulations is not merely unacceptable; Texas sim-

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[47] EPA defends its prohibition of new lakes on the ground that cooling towers, in fact, evaporate less water than cooling lakes. While this may be true in terms of total evaporation considering cooling use only, not all water loss can be attributed to the cooling function since such lakes are multipurpose in nature. They may be designed, for example, so as to augment low stream flows for the ultimate benefit of other water users, and also provide flood control. Also, they may be constructed so as to meet the water needs of communities as well as provide an opportunity for water recreation. Thus, we reject EPA's attempt to use isolated water consumption comparisons to support its blanket requirements.

[48] Three acre-feet of water equal one million gallons.

ply does not have the water resources available to comply."[49]

EPA dismissed these concerns during the rulemaking process, however, on the ground that "much of the evaporated water would precipitate [again] through the natural water cycle."[50] This is obviously not a sufficient answer and demonstrates a serious lack of concern for a balanced consideration of the total environmental impact of the regulations. In Arizona and New Mexico, for example, almost all precipitation is from tropical storms which originate in the Caribbean or Mid-Pacific, while in California almost all precipitation originates in the North Pacific. Little, if any, of the water which evaporates in these States returns in the form of rain. Thus, any new use of water in these areas results in a net reduction in the water supply remaining available for other uses.[51]

It is clear that Congress intended such reductions in water supply to be taken into consideration by EPA in

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[49] Reflecting this concern over what constitutes the "best available technology" for water short areas, the General Counsel for the Department of Commerce, in a letter to EPA concluded that:

> "Subcategorization of the industry by locality taking into account the availability of water for consumptive use, should have been considered during formulation of the proposed guidelines."

Similarly, the Federal Power Commission recommended that the "best" technology in water deficient areas should reflect that form of cooling which is least water consumptive.

[50] 39 Fed. Reg. 8303.

[51] As the Federal Power Commission pointed out, "[t]his hydrologic system is such that EPA's response . . . appears most flipant [sic]." The FPC argued without avail the reasonable position that EPA analyze meteorological and water resource information so that the public could be assured that the effluent guidelines would cause no significant negative environmental impact in any region of the United States.

determining the best available technology to abate effluent discharges. The basic directive of the entire Act is set forth in § 102(a) of the Act and provides, in part, that EPA must give due regard to "the withdrawal of such waters for public supply, agricultural, industrial and other purposes."[52] In addition, § 104 provides for continuing comprehensive studies of the effects of the control of thermal discharges. In so doing, it requires that EPA "[i]n evaluating alternative methods of control . . . consider . . . the total impact on the environment, considering not only water quality but also air quality, land use, and effective utilization and conservation of fresh water. . . ."[53] This Congressional concern over the conservation of our limited water resources is further reflected in §§ 304 and 306 which require consideration of various enumerated factors including the non-water quality impact of any regulations on the environment in determining what constitutes the "best" technology.

We are of opinion, therefore, that EPA's ban on the use of new and existing cooling lakes is clearly not in accordance with the Congressional directive regarding the conservation of our water resources, probably in most areas of the country, and particularly as that ban applies to regions where refresh water is in short supply. It is evident from an examination of the record that EPA's regulations will result in needless water consumption and, thus, impede effective utilization of our fresh water resources. Accordingly, 40 CFR §§ 423.13(1), 423.15(1), and 423.25(1) are set aside and remanded to EPA for further consideration with directions that it fully evaluate the total environmental impact of any subsequent regulations which it may issue, particularly with reference to water usage and its effect on the more arid regions of the Nation.

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[52] 33 USC § 1252.

[53] 33 USC § 1254(t).

On remand, EPA may find it difficult to avoid the logic of the statement of the General Counsel of the Department of Commerce (*see*, footnote 49, *supra*) where he concludes that subcategorization of the industry by locality should have been considered taking into account the availability of water for consumptive use. It is difficult for us to see how any program could receive approval which did not, at the very least, balance the consumption of water against the water resources and its effect. Along this line, since the use of water is less in most lakes used for cooling and also for other purposes, their exclusion without taking into account water consumption may only be considered arbitrary and capricious. We repeat for emphasis that EPA must consider the almost immeasurable impact of needless increases in water consumption in any part of the country, especially the arid areas.[54]

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[54] We note in pasing that EPA, on March 26, 1976, published proposed new "Effluent Guidelines and Standards" for steam electric generating plants. 41 Fed. Reg. 12694. These regulations were merely proposed and there is no assurance that they will be adopted. However, under them, cooling lakes could be used for cooling purposes to the extent that they qualified as "recirculating cooling water bod[ies]." According to § 423.11(o)(3) of the proposed regulations, "recirculating cooling bod[ies]" are limited to lakes where:

> "[t]he projected long-term average annual total discharge from the impoundment is no greater than 100 cubic feet per second per 100 megawatt generating capacity (nameplate capacity) of the plant."

In response to an inquiry by the court made of all parties as to the effect of these proposed regulations upon the present controversy, the Brazos River Authority asserted that the new regulations did not alleviate the problem facing the more arid regions of the country since the definition of recirculating cooling bodies restricts the construction of new cooling lakes to smaller streams. Counsel for both the State of Texas and the United Water Act Group agreed. EPA did not respond directly to this contention but did agree that it would be appropriate to enter an order of remand as to the remaining cooling lake regulations.

Since EPA has chosen not to rescind the present regulations and

(g) *Sea Water Cooling Towers as Best Available Technology for Open Ocean Dischargers*

EPA's regulations also prohibit open ocean thermal discharges and require closed-cycle cooling at power plants located along the nation's coastlines.[55] Because fresh water towers would exacerbate water shortages in many coastal areas, EPA has recognized that cooling towers in such areas must, of necessity, employ sea water.[56]

Industry first challenges the forced construction of such cooling towers at new coastline plants on the ground that sea water cooling towers for full-sized power plants are not "currently available" and, thus, are not "demonstrated" as is required under § 306. We need not reach this question, however, since 40 CFR § 423.13(1), as amended by 40 Fed. Reg. 7095-96 (1975), has previously been set aside. Upon reconsideration of that portion of its effluent limitation guidelines, EPA should, nevertheless, allow industry the opportunity to comment upon any revised regulations insofar as they relate to sea water cooling towers and reconsider its position if industry's objections have merit. We especially note that the B. L. England Station may well be the only power station presently in existence which approaches the required technology. On remand, particular attention should be paid to data relating to the performance of that station. By emphasizing

since they apparently will not alleviate the problem facing Texas and other such states, this court is of opinion that the issuance of the proposed regulations does not render the present controversy moot. To the extent that EPA has retreated from its earlier position banning the use of all cooling lakes by new point sources, however, the court considers this a concession that its earlier position as to water consumption may have been in error.

[55] 40 CFR § 423.13(1), as amended by 40 Fed. Reg. 7095-96 (1975).

[56] 39 Fed. Reg. 36190 (1974).
[Footnotes 57, 58 and 59 are omitted.]

the B. L. England Station, we do not mean to exclude from consideration on remand other relevant information from legitimate sources.

(h) *EPA's Implementation of § 316(a)*

Section 316(a) of the Act provides that EPA may impose less stringent effluent limitations at any point source than might otherwise be required under either § 301 or § 306 "whenever the owner or operator of any such point source . . . can demonstrate that any effluent limitation proposed for the control of the thermal component . . . will require effluent limitations more stringent than necessary to assure the projection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water. . . ."[61] Petitioners contend that in implementing this section, EPA must provide that a plant's compliance with existing water quality standards constitutes *prima facie* evidence of compliance with the requirements of § 316(a). Accordingly, industry argues that EPA has not properly implemented § 316 and, thus, the applicable regulations must be set aside and remanded for further consideration.[62] We disagree.

Industry cites nothing in the Act or its legislative history which requires EPA to adopt its suggested test under § 316. We, of course, recognize that under the Act each state adopts water quality standards for inter- and intrastate water so as to "protect the public health or welfare, enhance the quality of water and serve the purpose of this chapter."[63] In addition, such standards must take into consideration "[the receiving water's] use, and value for public water supplies, propagation of fish and

[61] 33 USC § 1326(a)

[62] EPA's regulations implementing § 316(a) are at 40 CFR Part 122, especially subparts B and C, 39 Fed. Reg. 36175-84 (1974).

[63] 33 USC § 1313(c)(2).

wildlife, [and] recreational purposes. . . ."[64] Moreover, EPA is required to review all such standards and revise them where they are deemed inadequate.[65] So we do not agree with Industry that the § 316(a) "protection and propagation" standard must be deemed satisfied if the thermal discharge in question meets the applicable water quality standards as distinguished from effluent standards.

EPA points out that state water quality standards typically apply to an entire waterway or a relatively large segment of it. By way of contrast, EPA views § 316(a) as providing for consideration of specific site conditions in the setting of thermal limitations for individual power plants. Thus, while a greater level of thermal effluent by a generating unit might well fall within the general requirements of an approved state standard, EPA takes the position that such discharge might nevertheless cause serious harm to a particular spawning ground, for example, located just below the plant's discharge point. It is such specific site conditions to which EPA contends § 316(a) is directed.

While both the position of Industry and EPA have force in logic, we are of opinion that *Train* v. *NRDC, Inc.*, 421 US 60 (1975), is controlling here. There, the court indicated that while an agency's interpretation of its statutory authorization need not be "the only one it permissibly could have adopted. . . [if] it was at least sufficiently reasonable . . . it should [be] accepted by the reviewing courts." 421 US at 75. Moreover, the court went on to reiterate that where an agency's interpretation of a particular act is not unreasonable, Courts of Appeals ought not substitute their judgment for that of the agency. *Id.*

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[64] 33 USC § 1313(c)(2).

[64] 33 USC § 1313(c)(2).

[65] 33 USC § 1313(c)(3).

at 87. Thus, in the absence of statutory language or legislative history indicating that compliance with state water quality standards should be deemed to satisfy the requirements of § 316(a), we think EPA's position is reasonable. Accordingly, we decline to set aside 40 CFR Part 122 implementing § 316(a) of the Act.

(i) *Rainfall Runoff Regulations*

EPA's regulations also limit suspended solids in rainfall runoff from areas disturbed by construction activity[66] or used for "material storage"[67] to 50 mg/l. Industry challenges these limitations on the grounds that (1) they are impermissibly vague and apply to nonpoint source runoff; (2) EPA did not adequately consider control costs; and (3) the record does not support the 50 mg/l limitation.

(1) *Applicability to Nonpoint Sources*

Congress consciously distinguished between point source and nonpoint source discharges, giving EPA authority under the Act to regulate only the former.[68] Section 502(14) defines a "point source" as:

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[66] 40 CFR §§ 423.42, 423.43, 423.45. "Construction runoff" was originally defined as "the rainfall runoff from any construction activity and any earth surface disturbed by such activity from the inception of the construction until construction is complete and any disturbed earth is returned to a vegetative or other cover commensurate with the intended land use." 40 CFR § 423.41(c). A subsequent amendment inserted the words "point source" before the term "rainfall runoff." 40 Fed. Reg. 7096 *amending* 40 CFR § 423.41(c).

[67] The regulations define "material storage runoff" as "the runoff from or through any coal, ash, or other material storage pile." 40 CFR § 423.41(b).

[68] Sections 301(a), 301(b), and 306 of the Act give EPA authority to regulate point source discharges. Nonpoint sources are subject only to analysis, study, and suggestions, pursuant to § 304(e).

> "[A]ny discernible, confined and discrete conveyance, including, but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation or vessel or other floating craft from which pollutants are or may be discharged."[69]

Industry agreed throughout the rulemaking that contaminated runoff discharges from coal storage and chemical handling areas fell within this definition and should be subject to reasonable controls. It does not contest such application of the regulations. Contaminated runoff from these limited areas is, according to Industry, ordinarily collected into a "point source" and can reasonably be treated so as to remove any pollutants.

Industry asserts, however, that EPA's material storage runoff regulations purport to cover not only point sources such as coal storage areas, but also nonpoint sources as well. Rainfall runoff from areas such as those used to store construction material is, according to Industry, not normally routed into a "point source" collection system, and it is Industry's contention that EPA has no authority to compel such collection so as to transform a nonpoint source into a point source. EPA, on the other hand, argues that runoff from material storage sites, where channeled into a settling pond or other such collection system, is clearly subject to regulation. Thus, it takes the position that to exempt uncollected runoff from regulation would be to permit pollution by indirection which would otherwise be barred.

There is some logic in EPA's position, and we do not dismiss it lightly. Yet, Congress has limited the definition of "point source" to "any discernible, confined or discrete conveyance." Broad though this definition may be,

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[69] 33 USC § 1362(14).

we are of opinion that it does not include unchanneled and uncollected surface waters.

Industry also argues that while EPA's construction runoff regulations do purport to limit themselves to "point source" application, they fail to define the discharges to which they apply. This difficulty is allegedly brought about by the regulations' failure to define the area which they cover other than to say they include point source rainfall runoff from "any construction activity and any earth surface disturbed by such activity" related to power plants.

We agree. It is impossible to determine from the regulations whether the construction, for example, of chemical treatment plants, sewage lines, fuel storage and transportation facilities or other such units are subject to control. The only indication as to the breadth of these regulations is found in EPA's Development Document which states:

> "Rainfall runoff waste water sources include material storage drainage and runoff from construction activities. Construction activities include only those in the immediate vicinity of the generating unit(s) and related equipment. Runoff from other parts of the site (land and future generating units, construction of access roads, cooling ponds and lakes, visitor centers, etc.) is not intended to be covered by these limitations."[70]

This limitation upon the applicability of the rainfall runoff controls is, however, not found in EPA's published regulations. While the regulation is limited to point sources, the all-embracing aspect is not supported by the development document, the limits in which cannot be deemed to provide the guidance necessary for either the enforcing authorities who must apply these regulations on a case-by-case basis or the dischargees who must conform their activities accordingly.

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[70] 2 App. 209, 438.

We are of opinion that EPA's rainfall runoff regulations must be set aside and remanded with directions that EPA clarify the scope of their applicability and properly limit any subsequent controls to "point sources" only.

(2) *EPA's Consideration of Costs*

Industry also argues that EPA, in arriving at its limitations, did not adequately consider the cost of controlling ash pile and construction site runoff. It appears from the record that in estimating the costs associated with such control, EPA relied entirely upon data relative to coal pile runoff. The agency concedes this fact but argues that, insofar as the regulations apply to ash piles, the omission of the data is immaterial due to their rarity.

If the agency by regulation controls the runoff from ash piles (however rare) and construction activity (concededly common), it must consider the cost. That is the command of the statute. §§ 304(b)(1)(B); 304(b)(2)(A); 306(b)(1)(B).

EPA's cost analysis is also deficient for another related reason. EPA's new source standards [71] for disposal of fly ash effectively require the abandonment of the method of hydraulic transport of fly ash to ponds for settling by prohibiting any "discharge of TSS or oil or grease in fly ash transport water." The practical effect of this standard on coal-fired generating units, according to Industry, is to require all such plants to utilize dry fly ash transport systems.[72] Such systems produce large amounts of ash which will require storage—over 1000 tons per day at a

[71] 40 CFR § 423.15(e); 40 CFR § 423.25(e).

[72] EPA does not dispute this contention as to the effect of the regulation insofar as it requires dry fly ash transport systems. The agency does assert, however, that such systems have been developed and are in use.

single plant.[73] Given EPA's observation that most new generating units will be either coal or nuclear facilities,[74] it would appear that the costs of the required controls applicable to ash piles will be significant.

Without the use of hydraulic transport for fly ash, it is obvious that the ash pile which EPA now describes as a rarity will become common in the immediate future, especially at coal burning installations. Indeed, it is mandatory that something be done with the ash. And so long as it is an acceptable alternative (as it must be since EPA wishes to control it), the cost of its maintenance and control must be considered.

Industry further contends that, in relation to the construction site runoff limitations, a 3,000 MW plant will require, exclusive of any coal storage area, 100 to 400 acres of land, much of which will be the location of some construction activity. Collecting and treating runoff from such large areas, according to Industry, will cost far more than EPA's coal pile cost estimate. Even if we were to assume that Industry has over-estimated the area affected by the regulations as well as the associated costs,[75] we are nevertheless of the opinion that EPA has failed to offer any data to support its conclusion that the cost of treating construction site runoff is comparable to that required in controlling coal piles.

[73] A 2000 MW plant, for example, produces 400,000 tons of ash per year, approximately 70% of which is dry ash. A comparable 2100 MW plant burning low ash coal produces 1,815 tons of ash per day.

[74] Br. for Respondent at 90.

[75] Industry's 100 to 400 acre estimate includes space for parking lots, drives, and rail, barge or truck terminals, all of which are purportedly excluded from the regulation by the Development Document. See n. 70 supra.

Accordingly, upon reconsideration of its rainfall runoff regulations, EPA is directed to evaluate the associated cost of controlling ash pile and construction site runoff (as well as the maintenance of ash piles which is later discussed) before establishing any new discharge limitations.

(3) *Evidentiary Basis for the 50 mg./1 Limitation*

Finally, Industry takes the position that the record offers no support for EPA's conclusion that the 50 mg./1 limit on suspended solids in rainfall runoff from construction activity or material storage areas (other than coal piles) is attainable by the treatment method identified by the agency as "best available." We agree. As has been noted, EPA did not evaluate any "controlled area" relative to construction site or ash pile runoff. While there is data in the record concerning control techniques for coal pile runoff, there is no indication that such technology is feasible in the context of construction site or ash pile runoff.

EPA states "[t]he rainfall runoff limitation was derived from runoff studies done for the Agency" citing a March 1975 study at a Pennsylvania strip mine. Although the study shows a 92.8% efficiency in removal of solids, it is not available support for the regulations because it was made after the regulations were promulgated. *Tanners Council,* Nos. 74-1740, et al (4th Cir. 3/10/76), p. 4. Industry additionally argues that even with 92.8% efficiency, if the runoff level of 10,000 mg./1 TSS were encountered as was demonstrated at a Washington mine, the TSS discharged would be 720 mg./1, or more than 14 times the acceptable level of the regulations. EPA, of course, had no opportunity to rely to this argument, yet enough has been shown to require a remand for reconsideration of the whole problem. We add that no data is in the record on TSS concentrations from ash pile runoff or control of that problem.

We express no opinion as to whether, in fact, the limitation is appropriate or whether the technology (settling ponds) is acceptable. We merely conclude that the regulations are not supported by the record and that on remand EPA must establish that the required control techniques applicable to such sites can reasonably be expected to achieve the required effluent reduction which also must be supported by the record.

(j) *EPA's No-Discharge Standard for Fly Ash Transport*

As previously noted, EPA, in setting new source standards under § 306 of this Act, adopted a rule requiring no discharge of suspended solids from fly ash transport water.[76] As a result, coal-fired power plants will be required to use dry fly ash transport systems. Industry contends that in developing this no-discharge standard, EPA failed to analyze thoroughly the factors set forth in § 306. In essence, it is Industry's position that EPA has failed to show that dry fly ash transport systems are available to all sources required to employ them. We agree.

In support of its no-discharge regulations, EPA asserts that the record shows the successful use of dry systems at nine geographically dispersed centers and that the agency thoroughly considered the data derived from these sites in developing the dry fly ash standard. An examination of those portions of the record cited to us by EPA, however, indicates that the agency engaged in no meaningful consideration of the cost of achieving the required effluent reduction or the nonwater quality environmental impact and energy requirements associated with such systems as is required by § 306(b)(1)(B).

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[76] 40 CFR §§ 423.15(e), 423.25(e). The problem is compounded by the fact that air pollution laws and regulations require the collection of almost all fly ash from the stack exhaust which should be distinguished from bottom ash which collects in the furnace bottom.

Two of the references cited by EPA refer to mostly illegible handwritten notes which are untranslated and largely meaningless. A third reference refers to a one-page summary of a telephone conversation which purports to set forth only the installation cost figures for such systems at two unnamed Georgia Power Company plants. And that report fails to set forth any details as to the systems relative to the type of coal employed or the manner in which the ash is disposed of.[77] In addition, three of the reports relied upon by EPA are, in fact, environmental impact statements for proposed generating units not then in operation. These reports cannot support EPA's contention that dry fly ash systems are a "demonstrated" form of technology.[78] Finally, EPA refers to a report on the Centralia Steam Electric Project. That report indicates, however, that that unit is a mine mouth plant which uses low sulfur coal from a strip mine located immediately adjacent to the plant site. The ash which is generated by plant operations is hauled back into the mine, a unique arrangement not generally available to most power stations.

That, then, leaves only two plants which purportedly have dry fly ash systems—one in New York State and another at Turkey Point, Florida. The only indication in

[77] It is, nevertheless, interesting to note that even this report discounts the value of cost estimates on the ground that "costs can only be realistically evaluated on a plant-by-plant basis, where specific conditions of application are recognized." 12 App. at 80.

[78] One of the reports relating to the proposed Navajo Project indicates that even if dry fly ash systems were deemed to be "demonstrated," there might be serious non-water quality environmental consequences arising from their use in certain regions. It is there noted that the National Park Service has raised questions as to whether there is sufficient soil readily available in that area to cover the ash so as to stabilize it without seriously scarring large areas of land. In all events, we do not believe an environmental impact statement may be substituted for compliance with effluent limitations.

the report as to the manner in which fly ash is treated at Turkey Point is the assertion that:

> "Fly ash from mechanical collectors is recirculated to the boilers for reburning. Accumulated ash in the boiler bottoms is removed by hand and sold for the vanadium content."[79]

There is no indication whether the plant is coal- or oil-fired;[80] what type of ash storage is employed; what the cost of any dry fly ash system was; or what, if any, non-water quality impact the use of such a system has had on the adjacent area.

The report on the New York station, located at Ludlowville, is no more complete in terms of satisfying the criteria set forth in § 306(b)(1)(B). That report indicates that the total generating capacity at the site is only 300 MW. There is no indication as to the amount of ash produced annually, but it appears that it is collected in silos and disposed of by trucking it away to land fill sites. While it appears that the dry collection system was installed in 1972 at a cost of $5.6 million, there is no indication as to the resulting effluent reduction which occurred, if any. Moreover, the report does not show the methods employed to stabilize the fly ash at the disposal area or the costs associated with such disposal. Finally, there is no indication as to the effect landfill disposal has upon the environment or the energy requirements for the transfer of the ash from the plant site, considerations mandated by § 306.

Thus, whether taken as a whole or read separately, the reports cited to us in the record belie EPA's assertion that dry fly ash systems have been used successfully in nine

[79] 17 App. 103.

[80] Industry contends in its brief that the plant is, in fact, oil-fired and, therefore, the amount of ash generated is relatively insignificant. Pet. Reply Br. at Addendum IV, p. 5.

geographically dispersed areas of the country. Moreover, it is apparent that EPA has not adequately considered the costs associated with the required technology. The only cost data referred to in EPA's brief [81] is based upon the one-page summary of a telephone conversation regarding two unnamed power stations. As has been noted, that report does not set forth the nature of the systems employed or the manner of ash disposal.

Thus, based upon the present state of the record, we set aside the dry fly ash regulations, 40 CFR § 423.15(e) and § 423.25(e), for new sources and remand them for further consideration. On remand, EPA is directed to fully and systematically explicate the basis for its actions, giving full weight to the statutory factors set forth in § 306 of the Act. It should negate Industry's well taken complaint that "[t]here is no information in the record to show detailed studies of dry fly ash transport and disposal systems and techniques."

(k) *Credit for the Intake of Pollutants*

Industry next challenges EPA's chemical effluent limitations on the ground that the standards imposed are absolute and apply regardless of the pollutants in a plant's intake water. It is Industry's position that EPA has no jurisdiction under the Act to require removal of any pollutants which enter a plant through its intake stream. We agree.

Section 301(a) of the Act provides that "the discharge of any pollutant by any person shall be unlawful." [82] In turn, § 502(12) defines the term "discharge of a pollutant" to mean "any addition of any pollutant to navigable waters from any point source. . . ." [83] Thus, the Act prohibits only

[81] Respondent's Br. at 102, fn. 123.

[82] 33 USC § 1311(a).

[83] 33 USC § 1362(12).

the addition of any pollutants to navigable waters from a point source. Those constituents occurring naturally in the waterways or occurring as a result of other industrial discharges, do not constitute an addition of pollutants by a plant through which they pass.[84] By imposing gross limitations, Industry argues that EPA has charged each point source with the responsibility of removing not only its own increment of pollutant from the waterway but also all pollutants, natural or otherwise, presently in the waterway.

EPA asserts that the objection about which Industry complains has been remedied by recent amendments to the regulations. Specifically, 40 CFR § 125.28 provides that a discharger will be credited for pollutants in his intake water, but only if he "demonstrates . . . that specified pollutants which are present in the . . . intake systems designed to reduce process wastewater pollutants and other added pollutants to the levels required by applicable limitations or standards." [85] Industry is, nevertheless, required to treat and reduce pollutants other than those added by the plant process. This, we are of opinion, is beyond the scope of EPA's authority.

Industry would have us set aside the present utility industry regulations and remand them to EPA in order that they may be redrafted to cover only net as opposed to gross discharges of pollutants. We feel this is unnecessary, however. Instead, we are of opinion that the regulations here challenged may be brought into conformity with the Act by construing 40 CFR § 125.28(a)(2) to read as follows:

[84] Such a plant may not, of course, replace a natural constituent in the incoming water, for example sand and silt, with a different contaminating pollutant, for example phosphate, in its waste stream since discharge of the latter would constitute an "addition" of a new pollutant by the plant.

[85] 40 Fed. Reg. 29850 (1975).

> "The applicant demonstrates to the Regional Administrator, prior to the issuance, denial or modification of his permit, that specified pollutants which are present in the applicant's intake water will not be removed by wastewater treatment systems *as* designed *and used to* reduce process wastewater pollutants and other added pollutants to the levels required by applicable limitations or standards."

Thus, we construe the reference to a "treatment system" in § 125.28(a)(2) to mean those systems designed and used for the removal of process waste water polluants. This allows industry a credit for all pollutants in a particular plant's water supply, and the present regulations, though couched in terms of gross limitations, will, in effect, be construed to impose only net discharges standards. As such, no plant could be said to be in violation of the limitations on account of pollutants that it did not add to the water.

(1) *Unique Factors Affecting Consolidated Edison*

Consolidated Edison seeks more flexible regulations due to its somewhat unique location in New York City. It cites the age of its buildings with the accompanying problems, the unavailability of land, the actual use for navigation of the already badly polluted New York harbor, and the extremely high costs; factors which it and other power companies physically located in highly populated industrialized areas must face.

While it must be acknowledged that the problems faced by Consolidated Edison are those of few, if any, of the other power companies in the country, so far as its petition may be read as a request for leniency because of the already polluted condition of the harbor, it must be rejected. The 1972 amendments to the statute changed the system from

that of control of the quality of the body of water to effluent limitations as we have before noted.

But we have, we think, in providing for a more liberal variance provision, afforded this utility an avenue for relief. If it is doing all that the maximum use of technology within its economic capability will permit *and* if such use will result in reasonable further progress toward the elimination of the discharge of pollutants (which recitations are not meant to be taken as an inflexible standard in the preparation of a new variance provision), no reason appears why Consolidated Edison should not be able to procure such a variance should it comply with any other requirements of the variance. In so noting, we do not imply that Consolidated Edison is or may be entitled to any such variance. That question is not before us now and should await action for a variance.

We do not imply that such qualifications may be cost free; far from it, for economic capability of the applicant will be judged by the agency considering the variance application.

CONCLUSION

In summary, the following regulations are set aside and remanded to EPA for further consideration:

40 CFR § 423.12(a)—variance provision for effluent limitation guidelines representing the degree of effluent reduction attainable by the application of the best practicable technology currently available.[**]

40 CFR § 423.13(l)(m), as amended by 40 Fed. Reg. 7095-96—Thermal backfit requirements representing the degree of effluent reduction attainable by application of the best available technology economically achievable.

[**] 40 CFR § 423.12(a) is the only regulation specifically mentioned in the briefs. We will doubtless be advised upon receipt of this opinion if other like sections were intended to have been the subject of review.

40 CFR § 423.13(1), as amended by 40 Fed. Reg. 7095-96, and 40 CFR § 423.15(1), and 40 CFR § 423.25(1)—EPA's ban on the use of new and existing cooling lakes as an acceptable form of closed-cycle cooling.

40 CFR §§ 423.40 through 423.43—rainfall runoff limitations for material storage and construction site runoff.

40 CFR § 423.15(e) and 40 CFR § 423.25(e)—EPA's no-discharge limitation for fly ash transport water. In addition, we direct that EPA reevaluate (a) its requirements for closed-cycle cooling at generating units located along the nation's coastlines, and (b) its refusal to create a subcategory for AEC approved nuclear generating stations. We further direct EPA to include a variance provision for new sources in accordance with this opinion.

Breitenstein, Circuit Judge, concurring and dissenting:

I concur in the majority opinion except for its rejection of the variance provision which is found in 40 C.F.R. § 423.12(a) and which applies to the limitations set for the 1977 step in the "Generating Unit Subcategory."

Section 423.12(a) is virtually identical to the variance provisions for the 1977 step found in the regulations for the "Inorganic Chemicals Manufacturing Point Source category." See e.g. § 415.62. Our decision in *Dupont* v. *Train*, Nos. 74-1261 etc., dealt with the Inorganic Chemicals Category, recognized the regulatory variance applicable to the 1977 step and the statutory variance applicable to the 1983 step, and then said, slip opinion p. 20:

> "The administration of these provisions in practice is a matter of speculation at the present. The question will arise when a claim for a variance is made in a permit application."

In *Natural Resources Defense Council, Inc.* v. *Environmental Protection Agency*, opinion filed April 23, 1976,

the Second Circuit rejected an attack on the variance clause pertaining to the 1977 step and followed our decision in *DuPont* v. *Train*. See slip opinion p. 8. In so doing the Second Circuit said, slip opinion p. 10:

> "It would be premature at this point to consider whether the variance clause will be interpreted with sufficient liberality to accomodate all legitimate demands for flexibility. Such questions should await the disclosure and development of concrete factual controversies involving a single point source and its permit."

In providing for a permissible variance in the 1977 step, EPA was properly exercising its § 501(a), 33 U.S.C. § 1361(a), power "to prescribe such regulations as are necessary to carry out his [the Administrator's] functions under this Act." The statute, § 301(c), 33 U.S.C. § 1311(c), provides a variance procedure pertaining to the 1983 step and refers to the "economic capability" to comply with the requirements of § 301(b) (2) (A). I agree that a regulatory variance applicable to 1977 should not be more stringent than the statutory variance provided for 1983. Properly construed and applied § 423.12(a) is not more stringent.

The regulation begins by saying in its first sentence that EPA in establishing limitations took into consideration specified factors, including "age and size of plant, utilization of facilities, * * * control and treatment technology available, energy requirements and costs." The third sentence says that a discharger may submit evidence:

> "[T]hat factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines."

The fourth sentence says that the permit issuer "will make a written finding that such factors are or are not fundamentally different."

The majority opinion construes the phrase "such factors" to apply only to "technical and engineering factors." The majority's attempt, fn. 21a, to distinguish this case from *DuPont* v. *Train* does not convince me. The EPA interpretation mentioned in fn. 21a was before us when we decided *DuPont* v. *Train*. A reasonable interpretation of § 423.12(a) is to apply the word "such", as used in the third and fourth sentences, to the factors mentioned in the first sentence. That interpretation makes the regulatory variance for 1977 substantially conform with the statutory variance for 1983.

In any event I would not vacate and remand § 423.12(a) on the assumption that on a claim for variance EPA will give consideration only to "technical and engineering factors," and will ignore economic capability. The langauge of the regulation is "equipment or facilities involved." The regulation does not foreclose consideration of all the factors mentioned in the first sentence. If assumptions are to be made, I would assume that EPA would not apply the regulatory 1977 variance more stringently than the statutory variance for 1983. The statute, § 301(c), mandates consideration of "economic capability."

I agree with the Second Circuit that the question should await "concrete factual controversies." My dissent is confined to the action of the court in setting aside and remanding § 423.12(a).